SANTEC VIDEO TECHNOLOGIES

USER MANUAL

SanStore digital video recorder

Models:
SanStore 4/8/16LMX
SanStore 4/8/16MMX
SanStore 8/16HMX

SanStore LMX series

SanStore MMX series

SanStore HMX series

Version 1.4sfi/0711/engl/A5

Dear customer,

Thank you for purchasing a high quality SANTEC device.

We recommend that you read this manual thoroughly before operating your new system for the first time. Please follow all instructions and observe the warnings contained in this manual.

Please contact your local dealer or use the SANTEC Service Hotline if you have any questions or if you wish to claim for a service or warranty.

You will find further information on our website:
www.santec-video.com

SANTEC Service Hotline:
+49 / 900 / 1 72 68 32
+49 / 900 / 1 SANTEC
(if available from your country)

support@santec-video.com

All rights reserved. This publication may not be reproduced, stored in a retrieval system or transmitted, in any form or by any means (electronic, mechanical, photocopying, recording or otherwise), without the written prior permission of Sanyo Video Vertrieb AG.

No reproduction of any part or excerpts thereof are permitted.

Errors excepted. Specifications are subject to change without notice for quality improvement.

SANTEC is a registered trademark of Sanyo Video Vertrieb AG. All other companies or products mentioned in this publication are trademarks, registered trademarks or brands of the respective company. They are not connected in any way with Sanyo Video Vertrieb AG.

© Copyright by Sanyo Video Vertrieb AG, Ahrensburg (Germany)

Table of contents

1. PREFACE 6
1.1 Description of symbols 6
1.2 Safety instructions and precautions 7
1.3 Important general note 8
1.3.1 Assembly and installation 8
1.3.2 Maintenance and repair 8
1.3.3 Spare parts and accessories 9
1.4 Items included in the delivery 9
1.5 Optionally available accessories 10
1.5.1 SANTEC accessories 10
1.5.2 Apps for Apple iPhone and Android smartphones 10
1.6 General note 10

2. CONTROLS 11

SanStore LMX series:
2.1 Front panel 11
2.2 Rear panel connectors 14

SanStore MMX series:
2.1 Front panel 16
2.2 Rear panel connectors 18

SanStore HMX series:
2.1 Front panel t 20
2.2 Rear panel connectors 23

2.3 Remote control 25
2.4 Virtual keyboard for mouse control 26

3. INSTALLATION AND CONNECTIONS 27
3.1 Camera, monitor, audio, alarm sensor and power cord 27
3.2 Alarm inputs and outputs 29
3.2.1 Connection of N.O. (Normally Open) 29
3.2.2 Connections of N.C. (Normally Close) 30
3.3 PTZ and controller connection 31
3.3.1 Connecting a speed dome to the DVR 31
3.3.2 Connecting both a speed dome and a DVR via junction box 32
3.3.3 Controlling 2 recorders 33
3.4 PC system requirements for network connection 34

4. QUICK START 35

5. LIVE VIEWING 36
5.1 Display overview 36
5.2 Multi-screen display and sequencing 38
5.2.1 Screen display 38
5.2.2 Multi-screen display and switch sequencing display 38
5.3 Quick buttons for multi-screen display 39
5.4 Zooming 40
5.5 Spot monitor 41

6. OPERATION 42
6.1 Login/logout 42
6.2 Menu navigation 43

7. SETUP 44
7.1 Display 44
7.1.1 General 44
7.1.2 Switch setup (monitor configuration) 45
7.1.3 Event 46
7.2 Camera 47
7.3 Record 50
7.3.1 General 50
7.3.2 Resolution and recording speed setting 52
7.3.3 Continuous/normal recording 53
7.3.4 Event recording 54
7.3.5 Continuous and event (motion/alarm) recording 56
7.4 Schedule 57
7.4.1 Chart setup 57
7.4.2 Holiday setup 59
7.5 Disk 60
7.5.1 Disk manager 60
7.5.2 Recording disk (HDD) 63
7.5.3 SMART status 64
7.6 Network 65
7.6.1 Ethernet 65
7.6.2 General 66
7.6.3 E-mail 67
7.6.4 SMTP 69
7.6.5 DDNS (dynamic DDNS) 70
7.6.6 Host List 71
7.6.7 Router and port forwarding 72
7.7 Device 74
7.7.1 General 74
7.7.2 Alarm 76
7.7.3 PTZ event 78
7.8 System 79
7.8.1 General 79
7.8.2 Time 80
7.8.3 Account 81
7.8.4 Update 83
7.8.5 Info 84

8. PAN / TILT / ZOOM (PTZ) CONTROL 85
8.1 PTZ menu 85
8.2 Preset and tour 86
8.3 Custom functions 87
8.4 Auto pan, auto tilt, power on/off 87
8.5 PTZ camera model 87

9. SEARCH / PLAYBACK 89
9.1 Playback 89
9.2 Time search 89
9.2.1 Multi channel playback 89
9.2.2 Preview search (single channel playback) 90
9.2.3 Recorded event search 91
9.2.4 Event source search 92
9.2.5 Event area search (single channel playback) 92

9.3 Go to search 93
9.4 Log list search 94

10. BACKUP 96
10.1 Manual backup 96
10.1.1 Internal CD/DVD-R/W drive *(only for MMX and HMX series)* 96
10.1.2 USB memory stick 98
10.1.3 Backup range setup 98
10.2 Auto backup via FTP server 99
10.3 Log list backup 100

11. Remote acces via Internet Explorer 101
11.1 IP address 101
11.2 Login 101
11.3 Recorder playback 103
11.4 Live mode 106
11.5 Remote playback 107
11.6 Download 109
11.7 Recorder setup 109

12. TECHNICAL SEPCIFICATIONS 110

1. PREFACE

Please read this user manual carefully before starting to operate this device. Please retain this user manual for future reference.

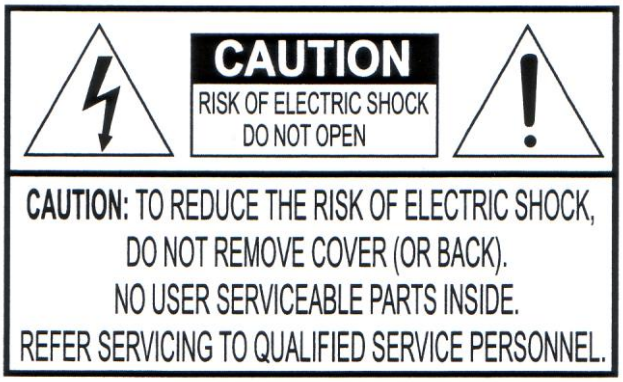
1.1 Description of symbols

Caution: Danger to life!
In the text, this sign symbolises life-threatening voltages which may lead to damages to humans and to material.

Attention: Important note!
In the text, this sign refers to operation and maintenance notes which have to be adhered to. Please ensure to follow theses notes.

General note!
In the text, this sign symbolises general notes and recommendations which might not necessarily be in direct connection with the device's operation.

1.2 Safety instructions and precautions


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

Caution: Overcharge
Never expose the power socket or the power cord to electrical overcharge. This may lead to fire and life-threatening shocks.

Caution: Thunderstorms
If there is a thunderstorm or if the device has not been in use for a longer period of time, please always disconnect the device from the power source. Disconnect the power cord. This protects the device from lightning damages or overcharging.

Caution: Entry of liquids or items
Never poke with metalic items in the ventilation slots of the device. You may touch dangerous live power items which may lead to an electronic shock, a short circuit or fire.

Note:
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if no installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Caution:
Risk of explosion if the lithium battery is not installed correctly or if it is replaced by an incorrect type. Only use batteries which are compatible to the device and are recommended by the manufacturer. Dispose of used batteries only in accordance with local regulations.

1.3 Important general note

Please read the following instructions carefully.

1.3.1 Assembly and installation

- On-site installation should only be performed by qualified maintenance personnel and must meet local specifications and regulations.
- Never operate the equipment without the respective protective cover near water, in dusty rooms or extremely humid rooms. The equipment could be seriously damaged.
- The openings on the equipment are intended for ventilation purposes and protect from overheating. Never cover or close off these openings. Rack mounting is only permissible if sufficient ventilation can be ensured. Overheating may damage the equipment or result in fire due to short-circuit.
- Power cables and other cables should be run so as to avoid being stepped on or potential damage from falling objects. Damaged cables may result in short-circuit and equipment damage as well as potentially fatal electrical shock.
- When connecting the supply voltage please note correct polarity. Faulty connections may damage or destroy the equipment.
- Only use the power source specified on the nameplate. Please consult your electrician if you are unsure whether the power supply on site is appropriate. Only use the supplied power cables or power adapters or the specified recommended power supplies.

1.3.2 Maintenance and repair

- Shut off and unplug the equipment from the power receptacle prior to every cleaning. Only clean the equipment with a slightly dampened cloth. Do not use harsh cleaners or spray cans. Using harsh solvents such as thinner or petrol may damage the housing surface.
- Immediately shut off the equipment and promptly disconnect it from the operating voltage. The following damages must be handled by an authorized service centre:
    - Damage to the power supply cable
    - If a liquid spilled onto the equipment or an object penetrated the equipment
    - If the equipment was exposed to water or another liquid
    - If the equipment is not functioning properly despite observing the instructions in these operating instructions. Only the controls specified in these operating instructions may be adjusted. Incorrect settings to the other controls may damage the equipment.
    - If the equipment fell to the floor or the housing was damaged
    - If the equipment performance is substantially the required performance
- Never attempt to maintain the equipment yourself, as this may expose you to hazardous voltages. Maintenance work should always be performed by qualified personnel only.

Attention:
Opening the appliance will result in loss of warranty. Do not try to repair the appliance yourself but contact your local distributor or specialist.

- For digital recorders, it is mainly the HDD which subject to natural attrition. HDD attrition may happen after approx. 8,000 to 10,000 hours of operating time which may lead to malfunctions. We thus recommend to replace the HDD in specific intervals in order to ensure a smooth operation of the appliance. Moreover, we recommend to clean the built-in fan regularly from dust and dirt to avoid interferences caused by overheating. Please do not hesitate to contact us in case of further questions.

Attention: Attrition of mechanical parts
We explicitely point out that any type of recording device, no matter if it is an analogue or digital device, is subject to natural attrition. Every recording device contains mechanical parts which – like any other device – need to be maintained and checked regularly. This is particularly important for appliances which run non-stop.

1.3.3 Spare parts and accessories

- Only use auxiliary devices which are recommended by the manufacturer. Non-recommended devices may influence the functionality and may cause electric shocks or fire caused by short circuits.
- Only use spare parts which are recommended by the manufacturer or which have identical characteristics. Non-approved spare parts may cause harm to people (electric shock) and may damage the device (fire).

1.4 Items included in the delivery

1x video recorder SanStore series LMX or MMX or HMX
1x remote control
2x battery
1x power cord
1x USB-stick (user manual)
1x USB PC mouse
1x user manual

1x loop through cable *(only for SanStore-16MMX-1TB)*
1x audio cable adapter *(only for SanStore-4MMX-1TB and SanStore-8MMX-1TB)*
2x audio cable adapter *(only for SanStore-16MMX-1TB)*
1x AC adapter *(only for LMX series)*
1 x audio patch cable *(only for SanStore-8HMX)*
2 x audio patch cable *(only for SanStore-16HMX)*

1.5 Optionally available accessories

1.5.1 SANTEC accessories

You can purchase the following accessories from SANTEC (optionally available):

Part number	Description
SanStore-19ER	19“ rack
SanStore-Mouse	USB mouse
SanStore-Stick	USB-stick
SanStore-EMS	EMS software to administer SanStore recorders
KSC-3505	Control keypad via RS-485 connection

1.5.2 Apps for Apple iPhone and Android Smartphones

These SanStore recorders can also be accessed via Apps which are available in the stores of the respective providers.
Below you will find a brief overview about the two Apps. More detailed information is available in the stores of the respective providers.

Apps for Apple iPhone and Android Smartphones:

	Max. DVRs	Live-View	Search/ Playback	Snapshot	OSD	DVR control	Virtual DVR	PTZ
MobileCMS Lite (free of charge)	2	Yes	No	Yes	Yes	No	No	Yes
MobileCMS (with costs; prices see stores)	10	Yes	Yes	Yes	Yes	Yes	Yes	Yes

1.6 General note

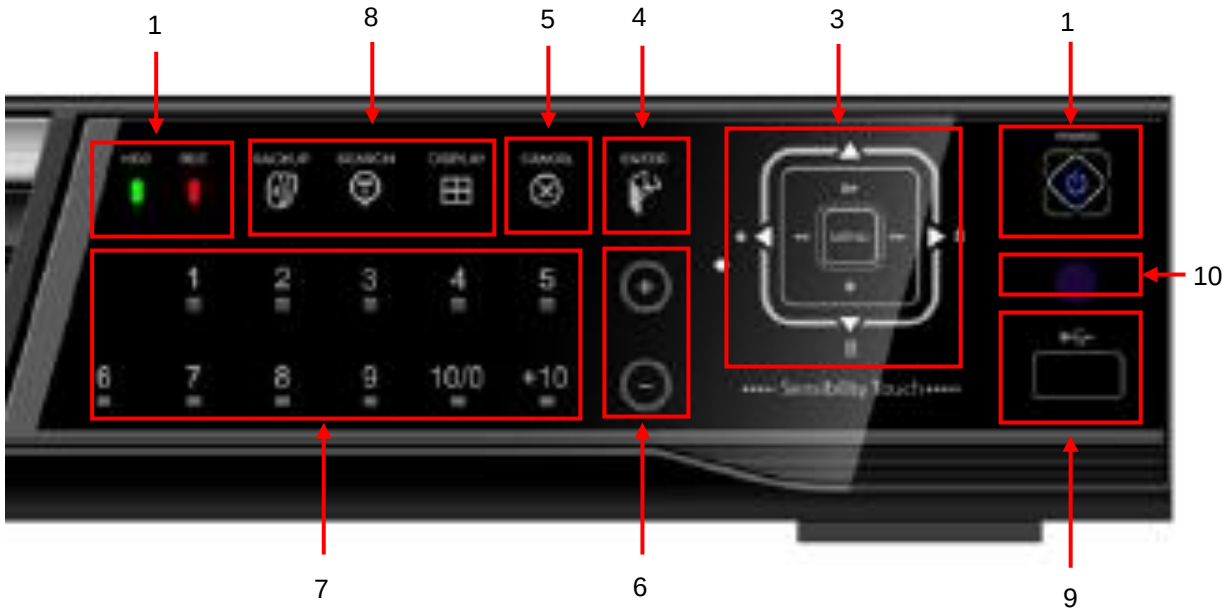
Windows 98/SE/ME, Windows 2000, Windows XP and Windows Vista are trademarks or registered trademarks of Microsoft Corporation in the USA and in other countries. All other companies or products mentioned in this publication are trademarks, registered trademarks or brands of the respective company. They are not connected in any way with SANYO VIDEO Vertrieb AG. Proprietary rights are with the respective manufacturers or brand owners. Illustrations and pictures in this user manual are for better understanding only and may differ from the actual product design. All technical specifications are subject to change. Errors excepted.

SANTEC and the SANTEC logo are registered trademarks of Sanyo Video Vertrieb AG.

2. CONTROLS

SanStore LMX series

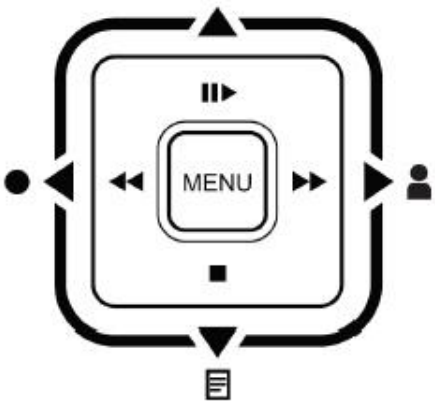
2.1. Front panel



1. **Status LED**
   3 LEDs indicate the status of the video recorder:
   Green: Recoder is operating
   Red: Recording in process
   Blue: Power on

2. **Playback / Record:**
   These functions are used in live mode or playback mode.

3. **Direction buttons:**
   In the menu setup mode, these buttons are used to move the cursor.



Still / Playback:
This button is used to still the picture or to start the playback mode (press 1x).

Reverse / Fast Rewind:
In still mode, this button is used to move reverse picture by picture.
In playback mode, this button is used to fast rewind.

Forward / Fast Forward:

In still mode, this buttons is used to move forward picture by picture.
In playback mode, this button is used to fast forward.

Stop:
Press this button tos top the playback.

Menu:
Press this button to display the main menu.

REC :
Press this button to start or to stop the recording.

Login/Logout:
Press this button to toggle between login and logout.

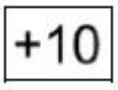
Log:
Press this button to display the log list screen.

4. **Enter:**
   Press this button to save the menu settings.

5. **Cancel:**
   Press this button to cancel the settings and to not save them.

6. **[+] and [-]:**
   Press these buttons to increase/decrease settings and values.

7. **Channel/numeric buttons 1-10**
   These buttons have several functions:
   - Enter numbers/numerical data (e.g. when prompted for a password)
   - Select channels/cameras
   - Choose the day in the schedule function
   - Enter letters to mark channels

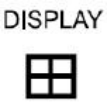


Press this button to choose channels >10 eingegeben werden.
Example: press this button one and then „6“ to see channel 16.

8. **Function buttons:**

Backup:
Press this button to go to the backup menu. You can set the time and the channels to backup footage from the video recorder.

Search:
Press this button to display the „Time Search“ menu.



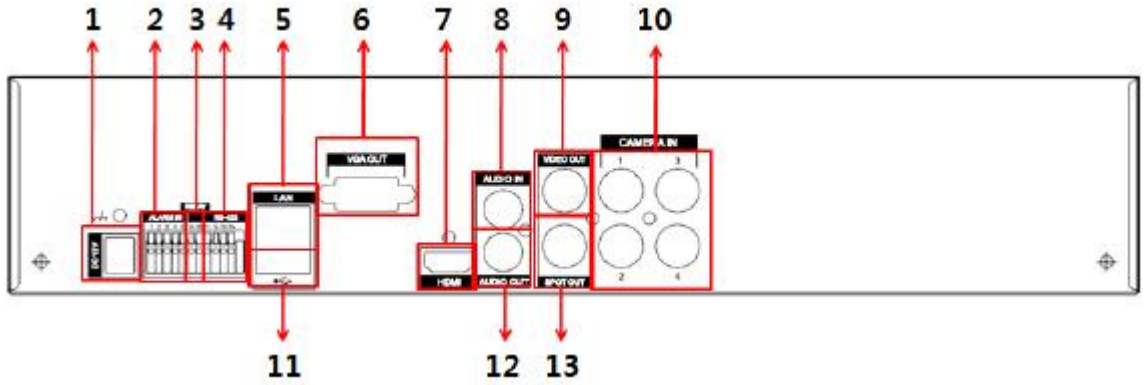
Display:
Press this button to display the cameras in multi-screen view.

9. **USB port:**
   You can connect USB compatible devices or a USB mouse.

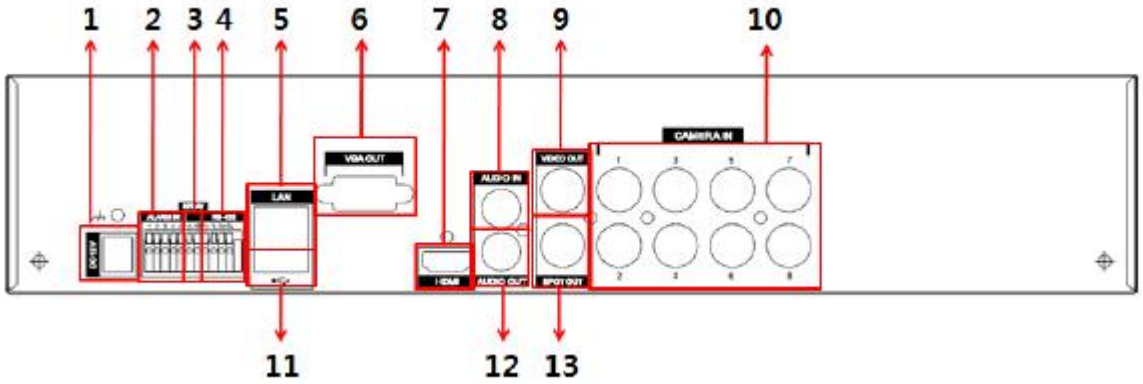
10. **Remote control signal receiver:**
    IR sensor to receive the control signal from the remote control. Do not block the receiver port on the recorder as this might be a reason for improper controlling.

2.2. Rear panel connectors

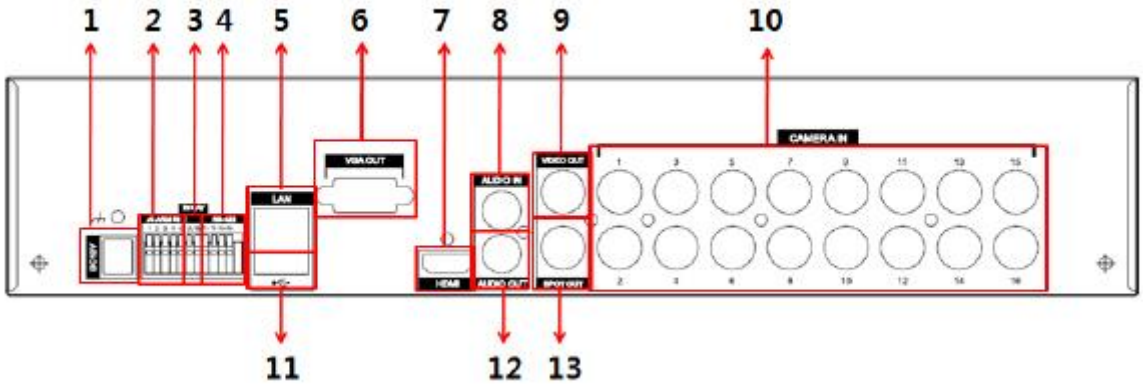
SanStore-4LMX (4 channels):



SanStore-8LMX (8 channels):



SanStore-16LMX (16 channels):



Connections:

1. Power:
   DC power jack

2. Sensor (alarm in 1-4):
   For connecting alarm inputs

3. Relay (alarm out 1):
   For connecting alarm out relays.

4. RS-422/485:
   For connecting a PTZ camera and/or a keyboard.

5. LAN (RJ-45 Ethernet port):
   For connecting to a remote PC via Ethernet network

6. VGA:
   VGA out connector

7. HDMI:
   HDMI out connector

8. Audio input (input: 1)

9. Video out (composite out):
   BNC standard composite video output connector.

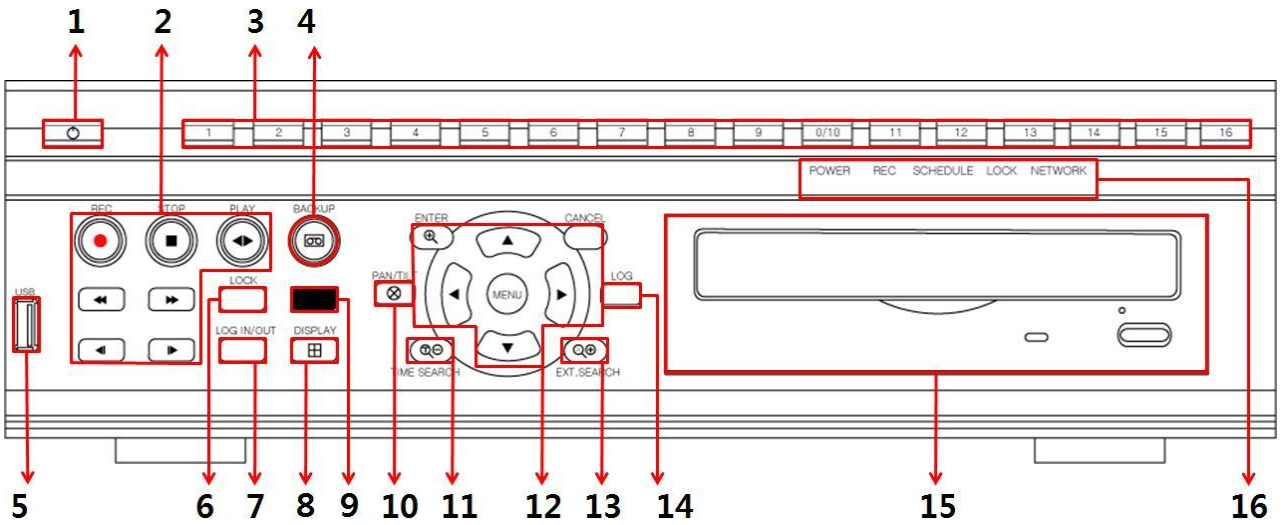
10. Camera inputs:
    BNC input (camera 1-4 / 1-8 / 1-16) connectors (depending on recorder model)

11. USB: For connecting USB compatible devices

12. Spot: Spot out connector

SanStore MMX series

2.1. Front panel



1. **Power:**
   Press this button to turn the power on; press again to turn the power off.
   The POWER LED (red) lights/goes off when the power is on/off.

2. **Playback / record control:**
   Used to start and stop recording or playback.

3. **Numeric [0-16]:**
   These buttons have a number of functions:
   - enter numerical data when prompted for the password
   - make channel/camera selection
   - choose the day in schedule option
   - enter alphabets to label each channel

4. **Backup:**
   Press this button to begin making a backup copy of the hard drive. If there is no peripheral recording device connected, this button cannot be used.

5. **USB:**
   USB compliant port allows use of memory sticks to backup video files or S/W upgrade.

6. **Lock:**
   Press this button to lock all units' key buttons including the remote controller.
   The LOCK LED (green) lights/goes off when the lock is on/off. To release press it again and enter the administer password.

7. **Log in/out :**
   Toggles log in and out.

8. **Display:**
   Press this button to display the cameras in multi-screen mode or to switch sequence function.

9. **Remote control signal receiver:**
   Do not block the receiver as the remote controller needs the line of sight to the receiver.

10. **Pan/tilt:**
    Press this button to control a PAN/TILT/ZOOM camera via RS422/RS-485 connection.

11. **Time search:**
    Press this button to display the time search menu.
    This button is also used for [-] to decrease settings.

12. **Menu, direction, enter, cancel:**

Menu: :	Press this button to display the main menu. Press this button to exit with saving changes.
Enter: :	Press this button to enter the sub menu.
Cancel::	Press this button to exit menu without saving.
Direction:	In Menu setup mode, used to move the cursor. ▲▼◀▶ In Zoom mode, used to move the zoom area.

13. **Ext. search:**
    Press this button to start external HDD search.
    This button is used for [+] to increase settings.

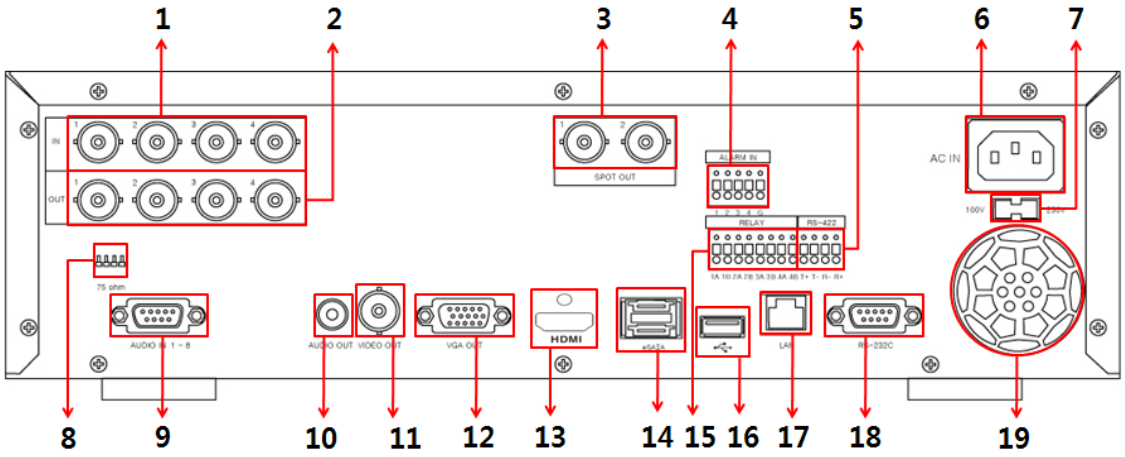
14. **Log:**
    Press this button to display the log-list screen.

15. **ODD:**
    CD/DVD - RW.

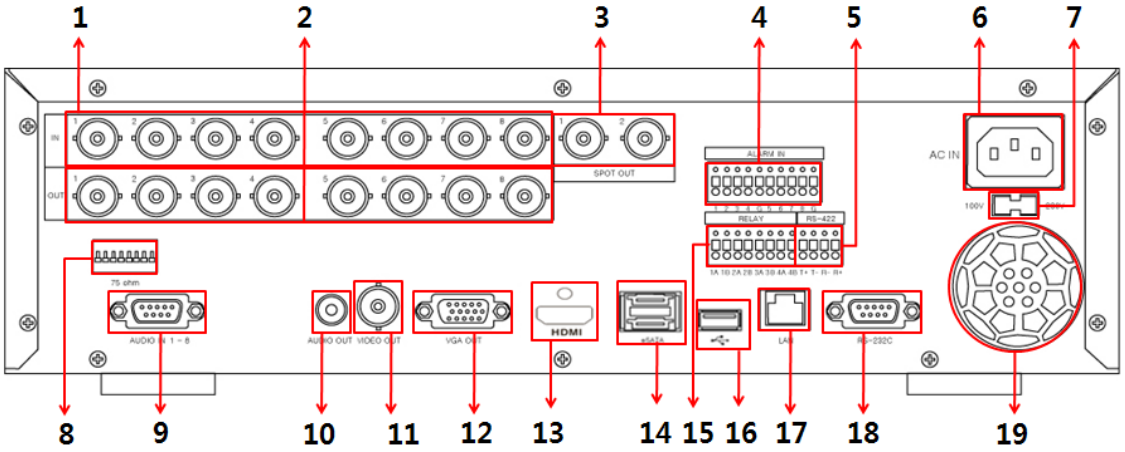
16. **Mode indicator:**
    Five LEDs display the status of the digital video recorder.
    - Power (red)
    - Recording (red)
    - Scheduled Recording (green)
    - Lock (green)
    - Network (green)

2.2. Rear panel connectors

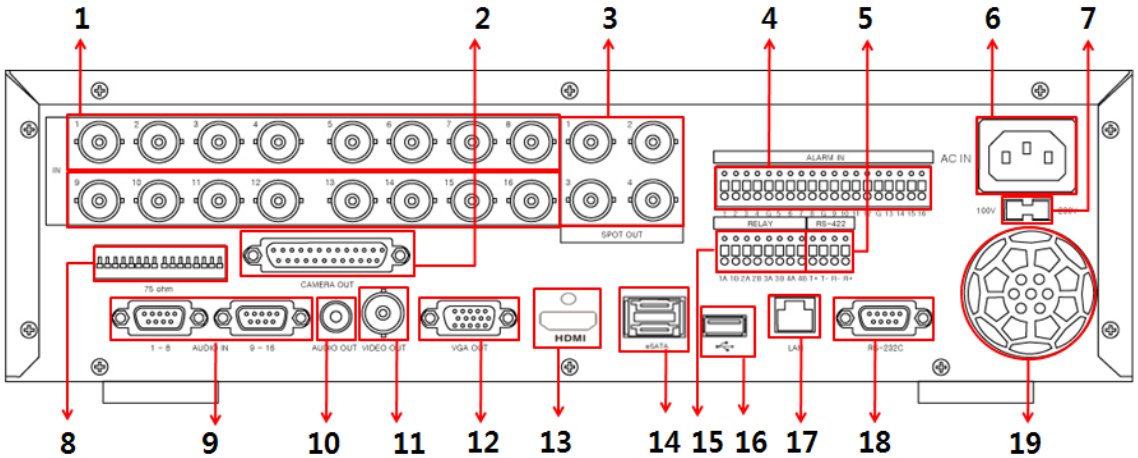
SanStore-4MMX (4 channels):



SanStore-8MMX (8 channels):



SanStore-16MMX (16 channels):



Connections:

1. **Camera inputs**:
   BNC input connectors (4/8/16 channels, depending on recorder model).

2. **Camera outputs**:
   Loop-out connectors (4/8 channels: BNC; 16 channels: D-SUB to BNC).

3. **Spot out connector**:
   4/8 channels: 2 spot out, 16 channels: 4 spot out.

4. **Alarm in:**
   4/8/16 alarm/sensor inputs.

5. **RS-422/485**:
   For connecting to PTZ camera and/or a keyboard.

6. **AC power socket**

7. **110V or 230V Power selection switch**

8. **75 Ohm termination**
   1-4/1-8/1-16

9. **Audio input connectors:**
   D-SUB to RCA
   (4/8 channels: 1-8 channels, 16 channels: 1-8 channels, 9-16 channels).

10. **Audio output (1) connectors:** RCA

11. **Analogue BNC video output**

12. **VGA out connector**

13. **HDMI out connector**

14. **E-SATA connector**:
    For connecting E-SATA compatible devices (HDDs).

15. **Alarm out:** 1-4 outputs.

16. **USB 2.0 connector:**
    For connecting USB compatible devices (PC mouse or USB stick).

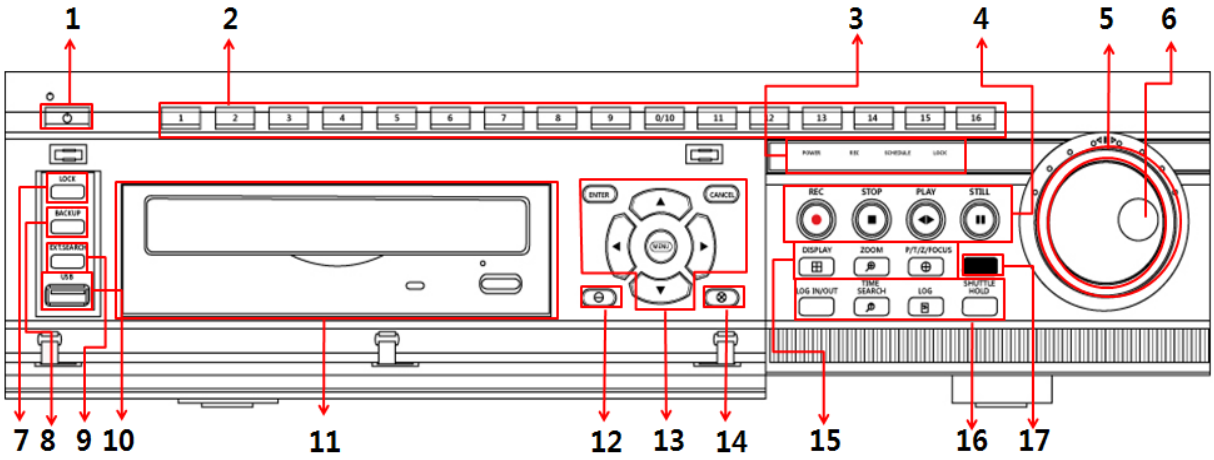
17. **RJ-45 Ethernet port:**
    For connecting to remote PC via Ethernet network.10/100/1000 BASE-T

18. **RS-232C (D-SUB 9 pin):**
    For connecting to debugging.

19. **Power Fan**

SanStore HMX series

2.1. Front panel



1. **Power:**
   Press this button to turn the power on; press again to turn the power off.
   The POWER LED (red) lights/goes off when the power is on/off.

2. **Numeric [0-16]:**
   These buttons have a number of functions:
   - enter numerical data when prompted for the password
   - make channel/camera selection
   - choose the day in schedule option
   - enter alphabets to label each channel

3. **Mode indicator:**
   Five LEDs display the status of the digital video recorder.
   - Power (red)
   - Recording (red)
   - Scheduled Recording (green)
   - Lock (green)
   - Network (green)

4. **Playback / record control:**
   Used to start and stop recording or playback.

5. **Shuttle ring:**
   Used to control the playback speed and to rewind or forward the image.

6. **Jog dial:**
   Used to forward or reverse the image during playback (field-by-field).

7. **Lock:**
   Press this button to lock all units' key buttons including the remote controller. The LOCK LED (green) lights/goes off when the lock is on/off. To release press it again and enter the administer password.

8. **Backup:**
   Press this button to begin making a backup copy of the hard drive. If there is no peripheral recording device connected, this button cannot be used.

9. **Ext. search:**
   Press this button to start external HDD search.
   This button is used for [+] to increase settings.

10. **USB:**
    USB compliant port allows use of memory sticks to backup video files or S/W upgrade.

11. **ODD:**
    CD/DVD - RW.

12. **[-] button:**
    To decrease the settings.

13. **Menu, direction, enter, cancel:**

Menu: :	Press this button to display the main menu. Press this button to exit with saving changes.
Enter: :	Press this button to enter the sub menu.
Cancel::	Press this button to exit menu without saving.
Direction:	In Menu setup mode, used to move the cursor. ▲▼◀▶ In Zoom mode, used to move the zoom area.

14. **[+] button:**
    To increase the settings.

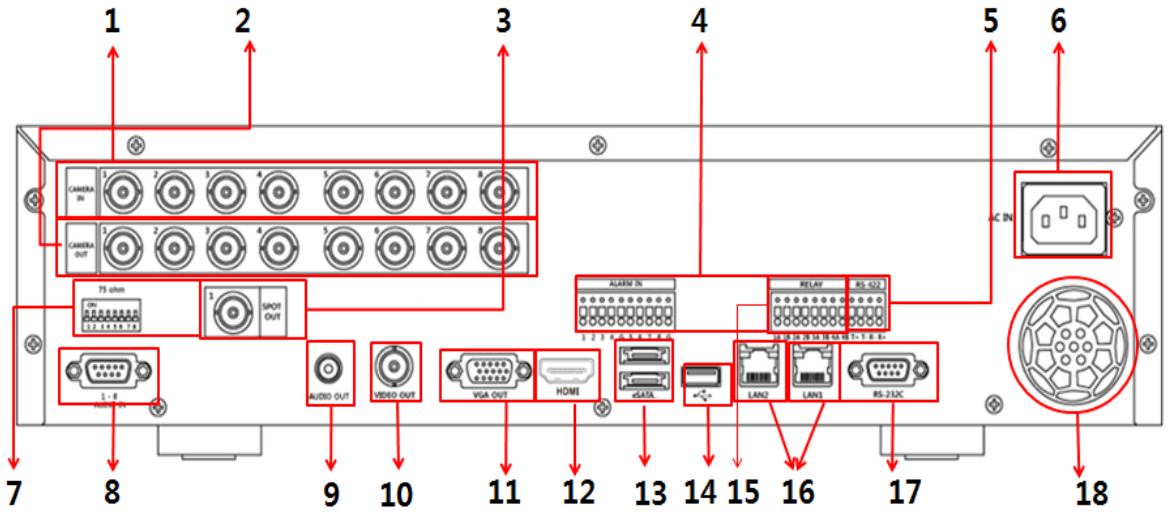
15. **Screen control buttons:**
    - **Display:**
      Press this button to display the cameras in multi-screen mode or to switch sequence function.
    - **Zoom:**
      Press this button to display the zoom area box; press “Enter” to enlarge the image. Use the cursor to move the zoom are.
    - **PTZ / Focus:**
      Press this button to control a PAN/TILT/ZOOM camera via RS-485 connection.

16. **Function buttons:**
    - **Log in /log out:**
      Toggle between log in and log out.
    - **Time search:**
      Press this button to display the time search menu.
    - **Log:**
      Press this button to display the log-list screen.
    - **Shuttle hold:**
      This button retains the selected playback or reverse playback speed. It is also used for controlling spot out while it is in live-view mode.

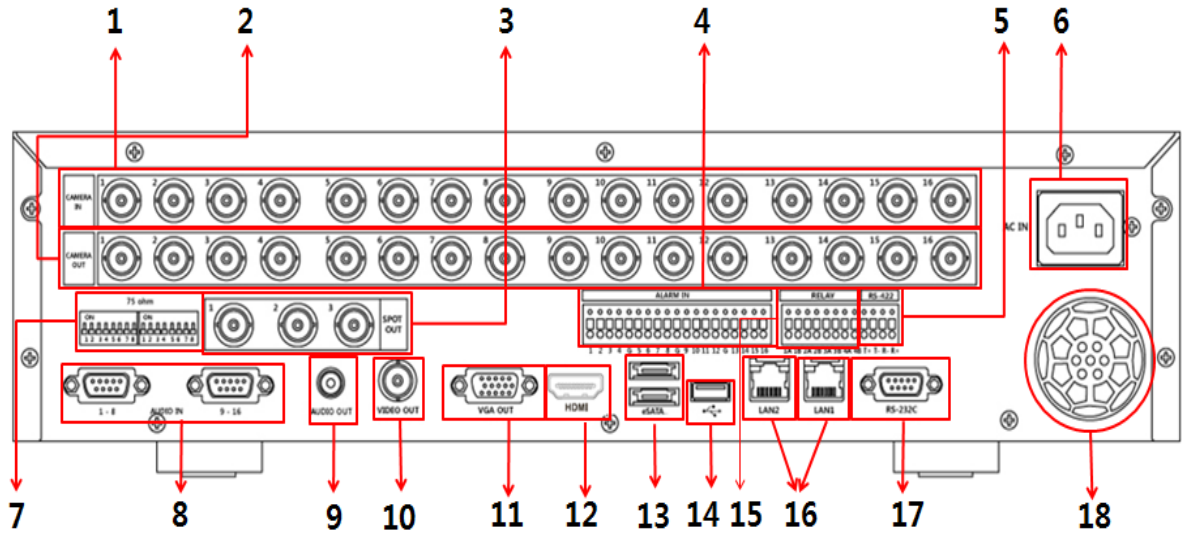
17. **Remote control signal receiver:**
    Do not block the receiver as the remote controller needs the line of sight to the receiver.

2.2. Rear panel connectors

SanStore-8HMX (8 channels):



SanStore-16HMX (16 channels):



Connections:

1. **Camera inputs**:
   BNC input connectors (8/16 channels, depending on recorder model).

2. **Camera outputs**:
   Loop-out connectors (8/16 channels: BNC)

3. **Spot out connector**:
   8 channels: 1 spot out, 16 channels: 3 spot out (digital).

4. **Alarm in:**
   8/16 alarm/sensor inputs.

5. **RS-422:**:
   For connecting to PTZ camera and/or a keyboard.

6. **AC power socket**

7. **75 Ohm termination**
   1-8/1-16 termination.

8. **Audio input connectors:**
   D-SUB to RCA
   (8 channels: 1-8 channels, 16 channels: 1-8 channels, 9-16 channels).

9. **Audio output (1) connectors:** RCA

10. **Composite monitor output:**
    BNC standard composite video output connector.

11. **VGA out connector**

12. **HDMI out connector**

13. **E-SATA connector**:
    For connecting E-SATA compatible devices.

14. **USB 2.0 connector:**
    For connecting USB compatible devices.

15. **Alarm out:** 1-4 outputs.

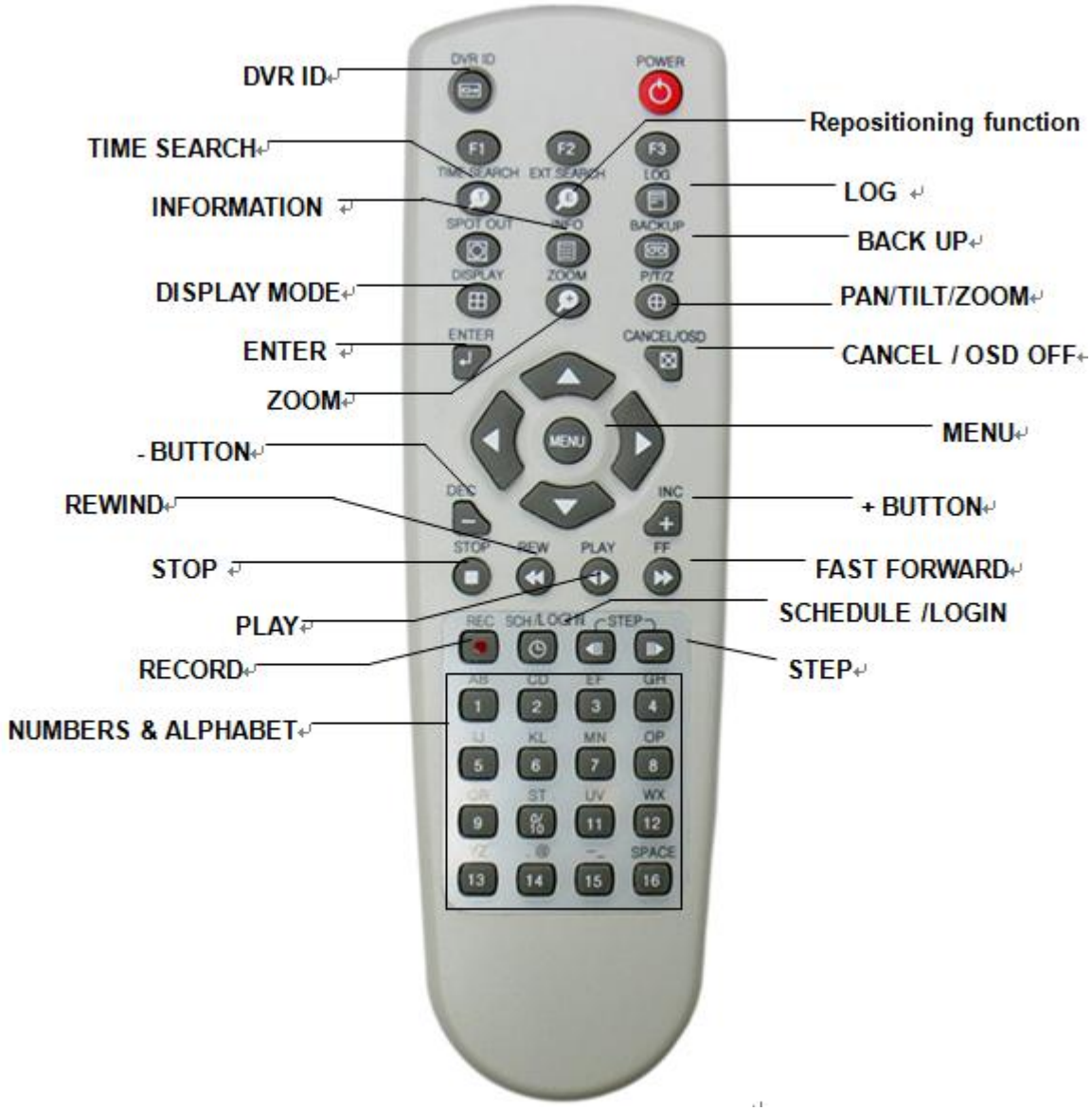
16. **RJ-45 Ethernet port:**
    For connecting to remote PC via Ethernet network.
    10/100/1000 BASE-T

17. **RS-232C (D-SUB 9 pin):**
    For connecting to debugging.

18. **Power Fan**

2.3. Remote control

All SanStore recorder series and models



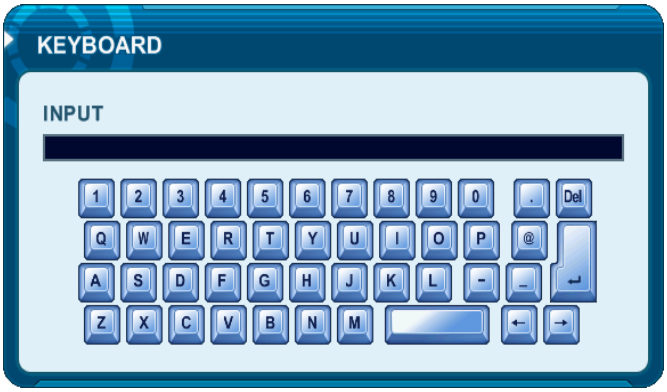
Note: DVR ID button:
Set the proper DVR system ID through which to operate. Press the ID button, and then press the number button within two seconds to select the system ID of the DVR. If you set the system ID to zero, you can control multiple DVRs at the same time.

2.4. Virtual keyboard for mouse control

All SanStore recorder series and models

This DVR provides a virtual on-screen keyboard to perform the control by mouse. Connect a mouse via USB port before use. If you click right button of your mouse in live mode and playback mode, you will see following virtual controller. This virtual keyboard operates similarly, but display different fields depending on the task being performed.

Virtual control panel



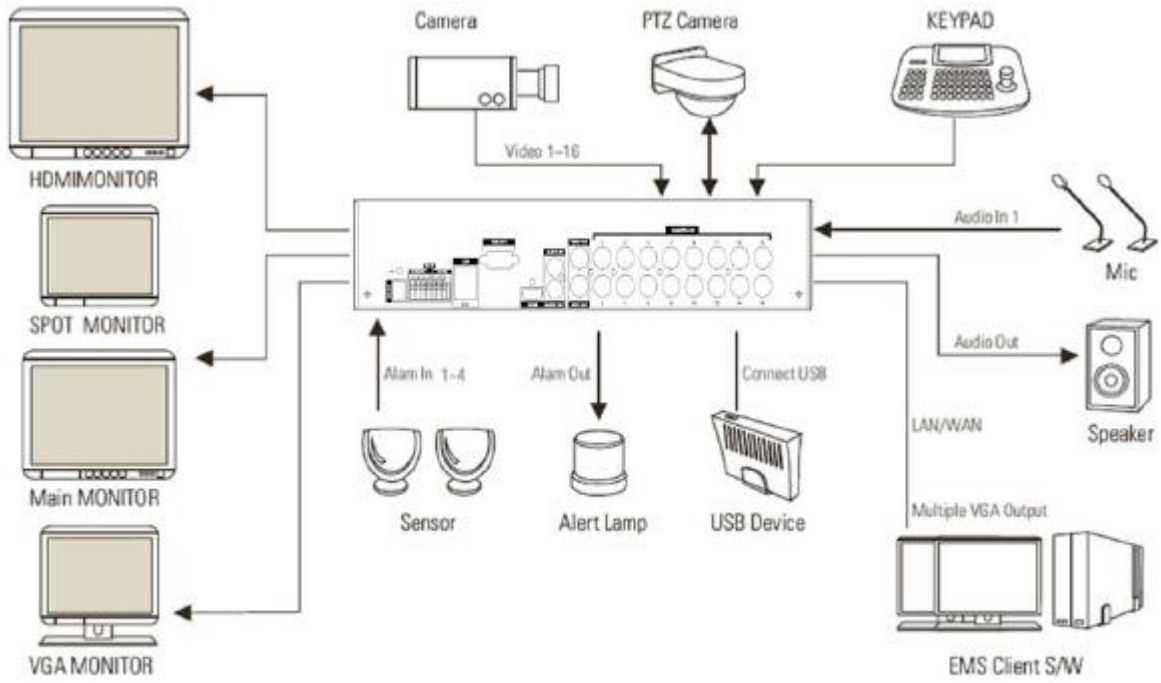
Virtual keyboard

3. INSTALLATION & CONNECTIONS

Note:
When connecting a monitor, please pay attention to the following:
If you want to use the recorder's HDMI output, the monitor to be connected has to have a HDMI input. Hence it is necessary to use a HDMI/HDMI cable. It is not possible to make a conversion to the DVI plug of the monitor, e.g. by using an adapter or a HDMI/DVI cable.

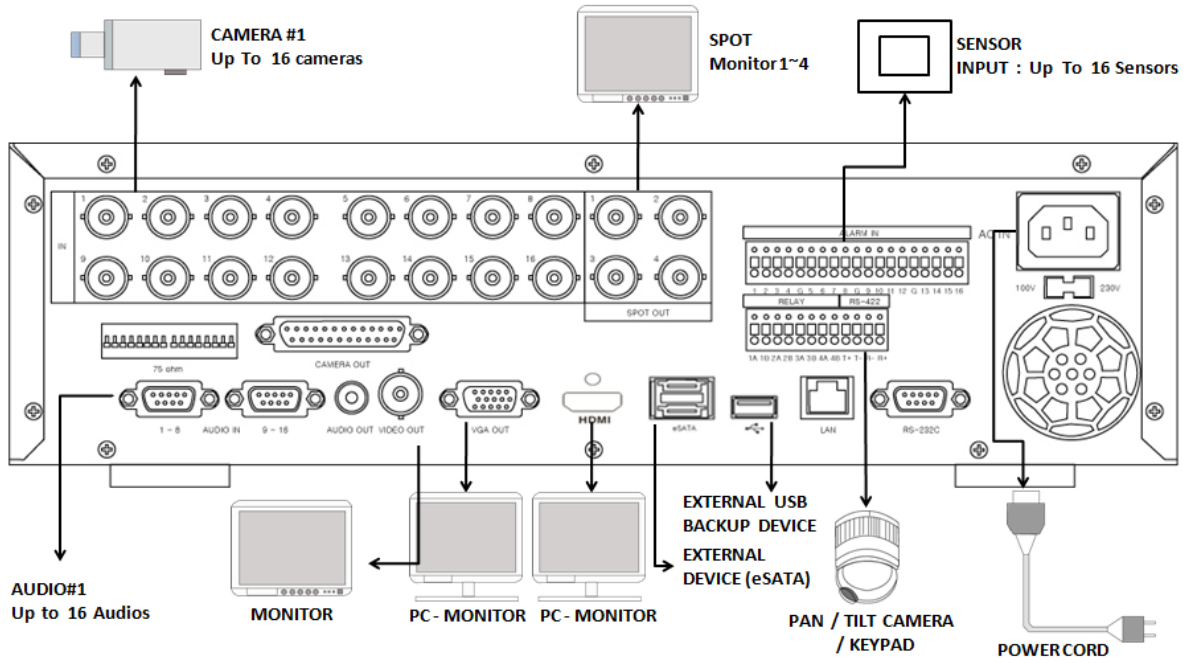
3.1. Camera, monitor, audio, alarm sensor and power cord

SanStore LMX series

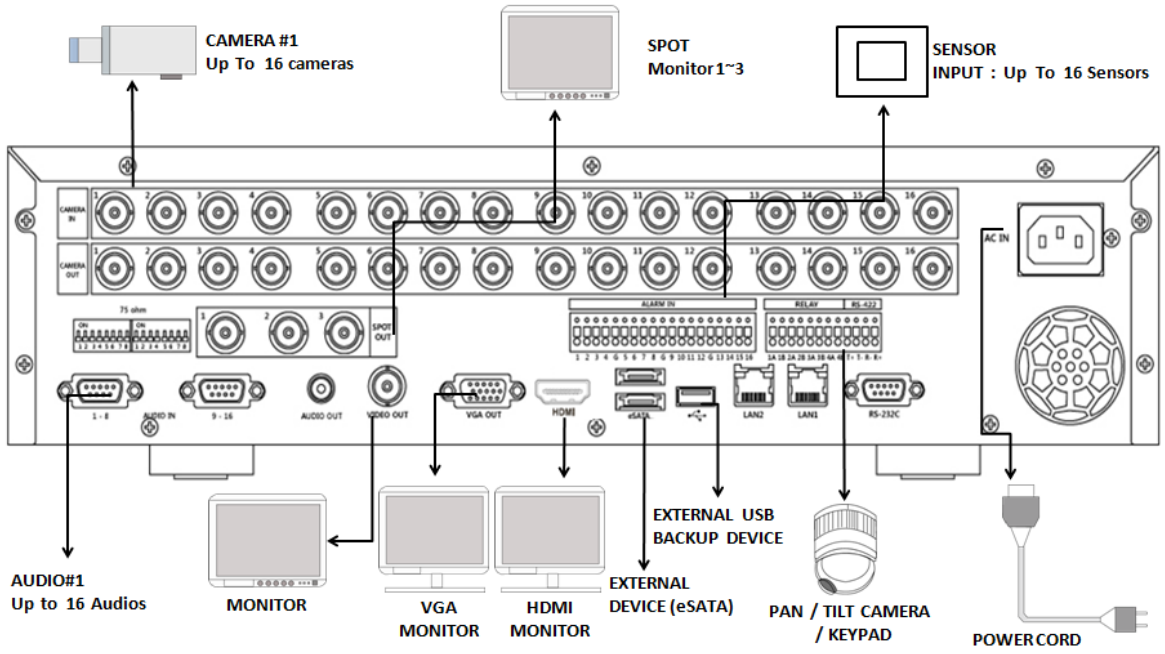


Note:
A picture can be displayed on 3 monitors at the same time by using the respective outputs (HDMI, VGA, FBAS).

SanStore MMX series



SanStore HMX series



Audio:

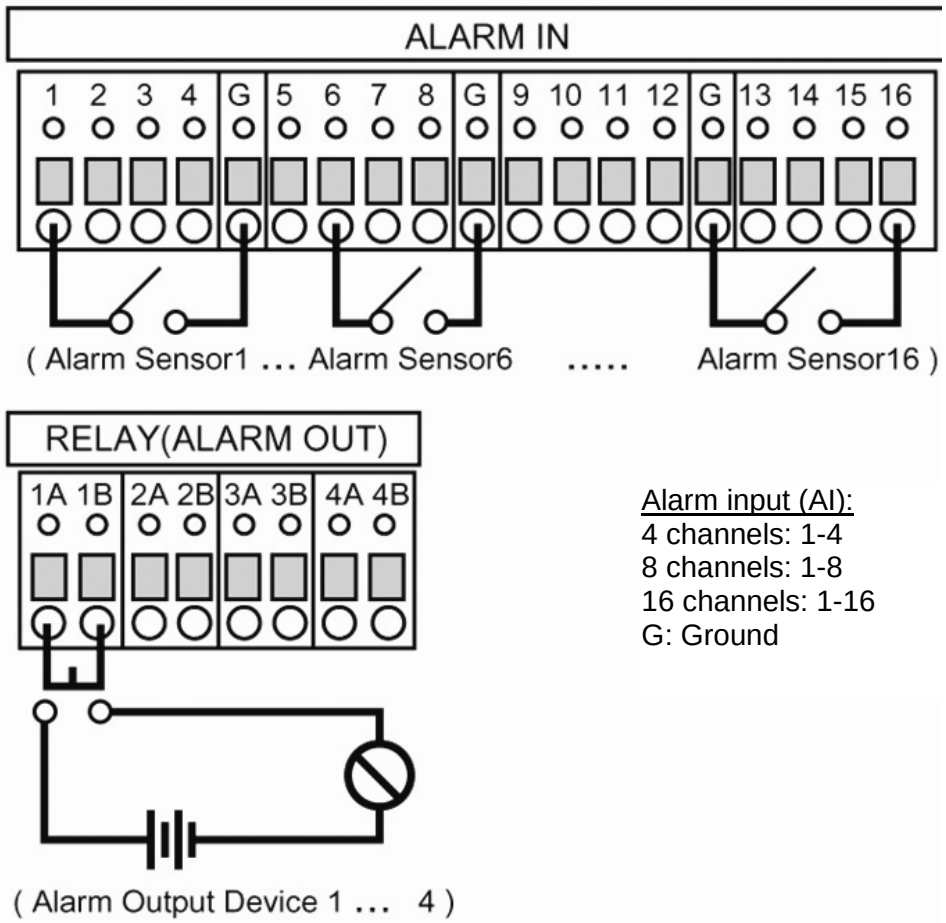
Audio	Input	Output
Impedance (0 dB)	10 k Ohm	300 ohm
Voltage range	1 Vpp	1.4 Vpp

Note:
A picture can be displayed on 3 monitors at the same time by using the respective outputs (HDMI, VGA, FBAS).

3.2. Alarm inputs and alarm outputs

SanStore MMX and HMX series

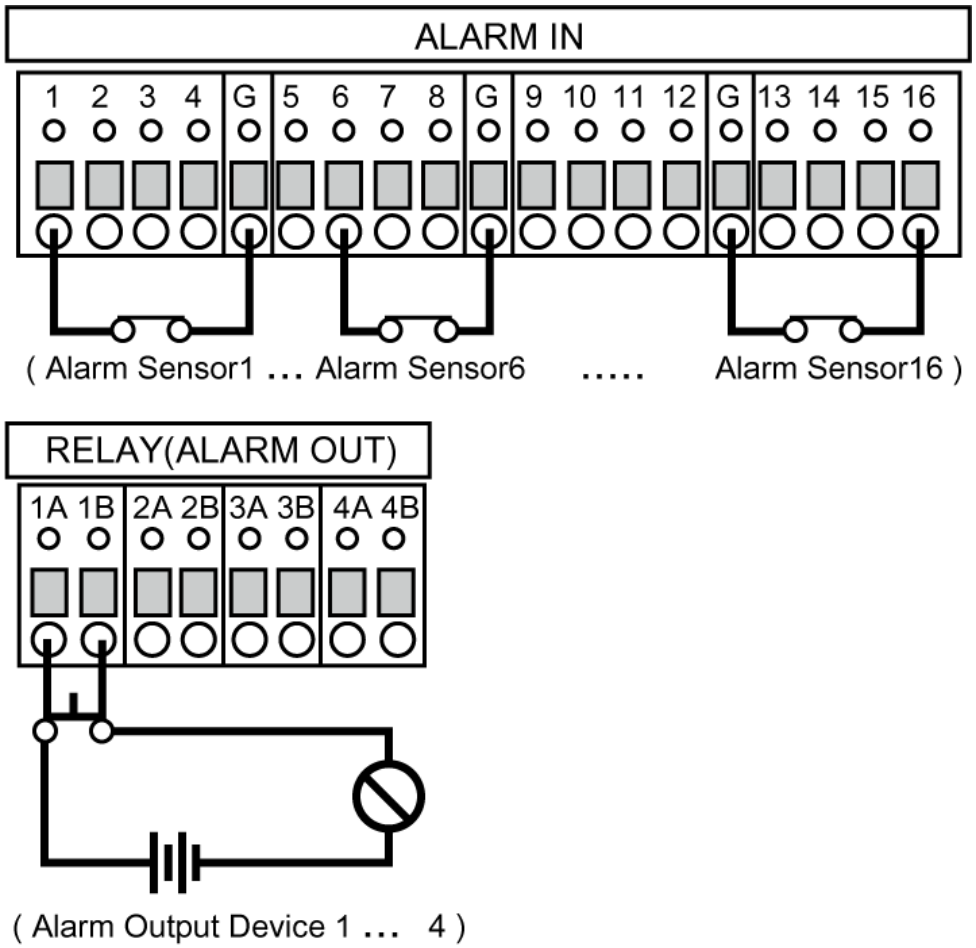
3.2.1. Connection of N.O (Normally Open


ALARM IN
1 2 3 4 G 5 6 7 8 G 9 10 11 12 G 13 14 15 16
(Alarm Sensor1 ... Alarm Sensor6 ..... Alarm Sensor16)
RELAY(ALARM OUT)
1A 1B 2A 2B 3A 3B 4A 4B
(Alarm Output Device 1 ... 4)

Alarm input (AI):
4 channels: 1-4
8 channels: 1-8
16 channels: 1-16
G: Ground

The maximum of alarm output is 1A 30 V DC, 0.5A 125 V AC.

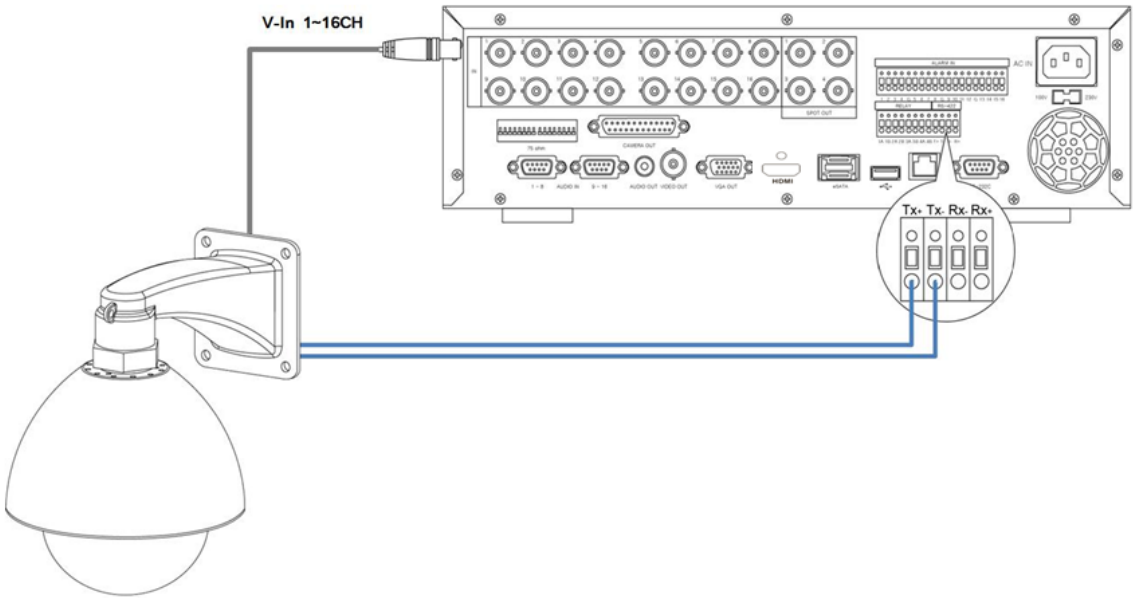
3.2.2. Connection of N.C (Normally Close)


ALARM IN
1 2 3 4 G 5 6 7 8 G 9 10 11 12 G 13 14 15 16
(Alarm Sensor1 ... Alarm Sensor6 ..... Alarm Sensor16)
RELAY(ALARM OUT)
1A 1B 2A 2B 3A 3B 4A 4B
(Alarm Output Device 1 ... 4)

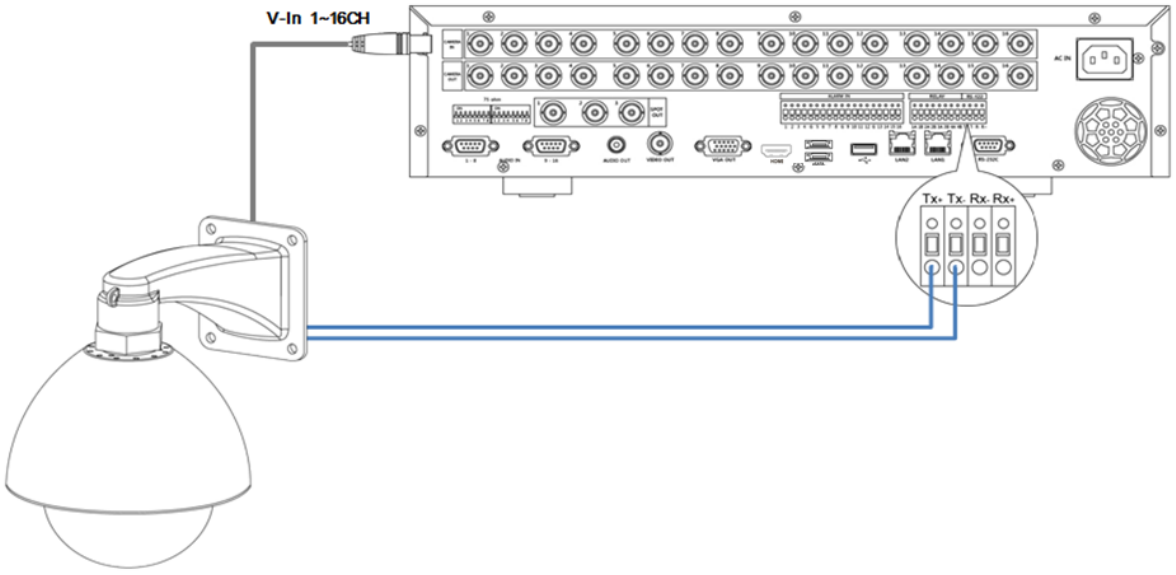
3.3. PTZ and controller connection

3.3.1. Connecting the speed dome directly to the DVR

SanStore MMX series

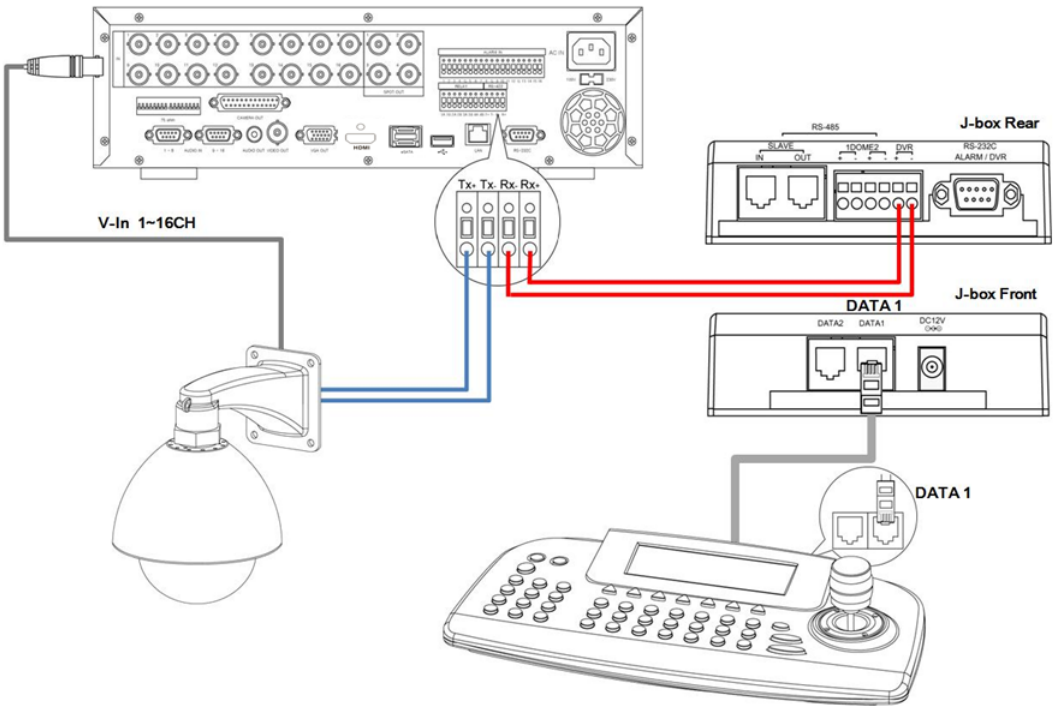


SanStore HMX series

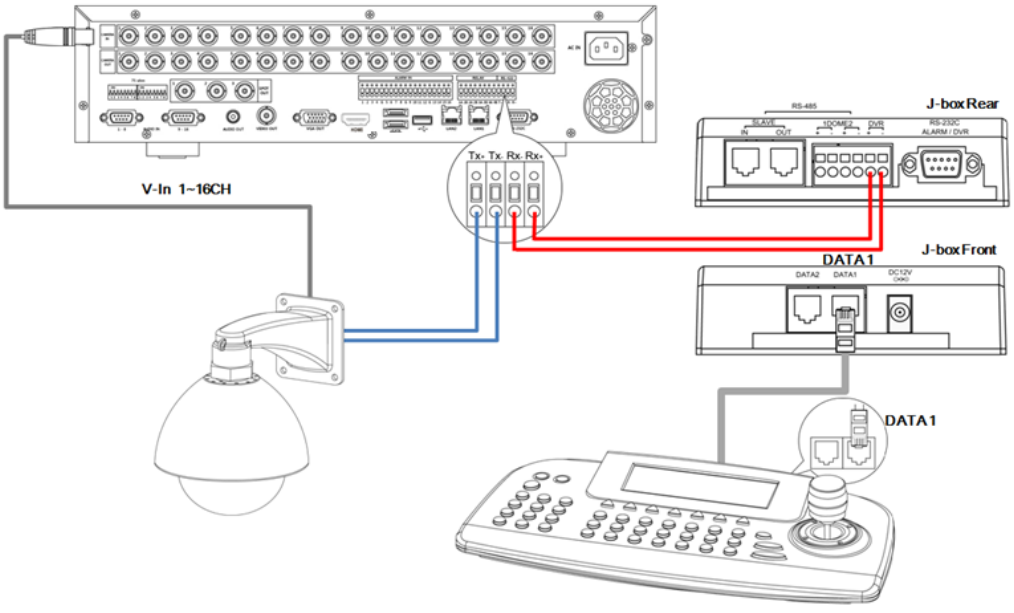


3.3.2. Connecting both speed dome and DVR via J-box

SanStore MMX series



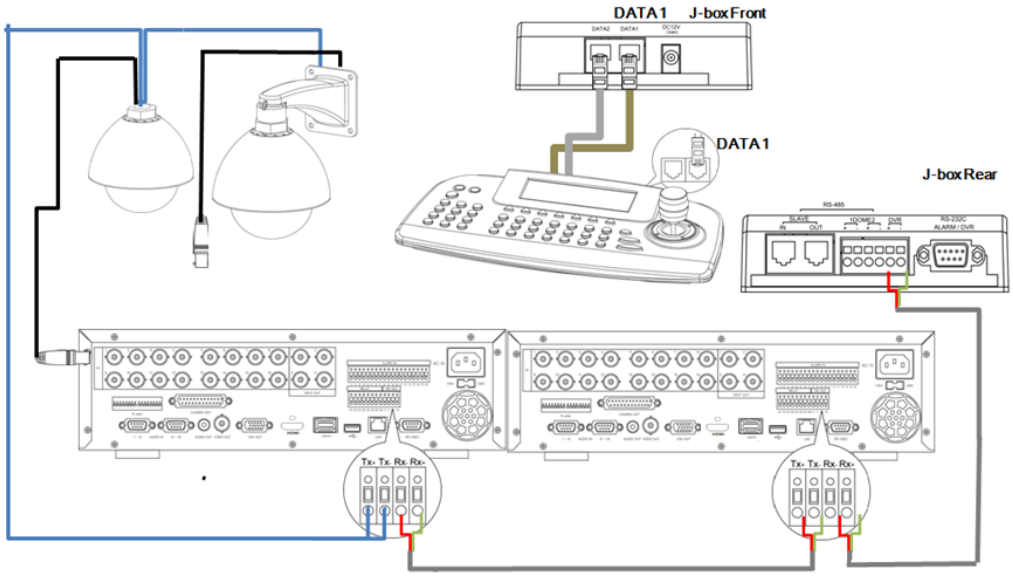
SanStore HMX series



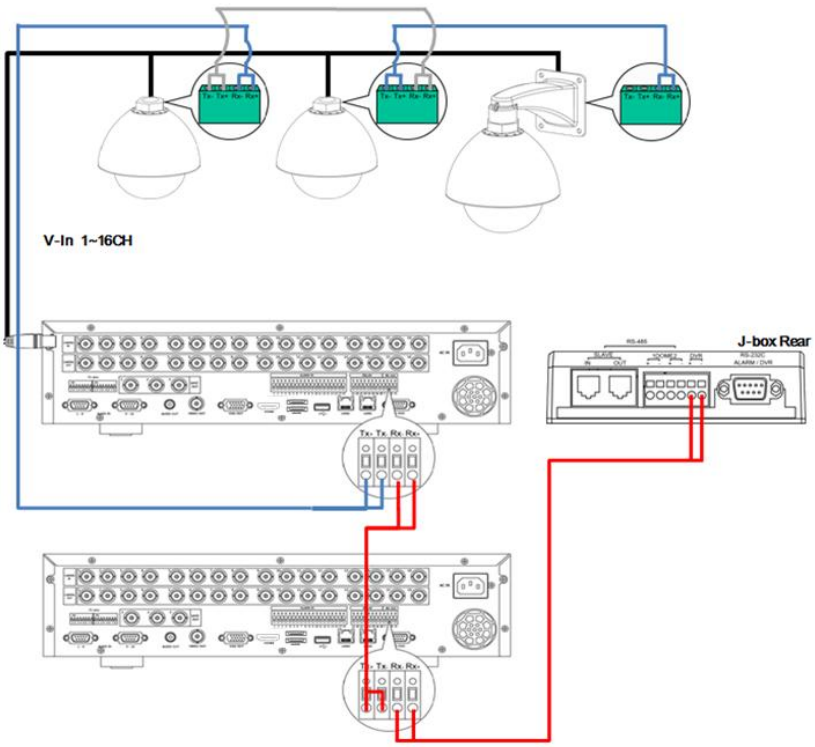
3.3.3. Controlling 2 recorders

Multiple PTZ cameras are connected by daisy-chaining the camera connection.
Multiple Keyboards are connected by cascade connection.

SanStore MMX series



SanStore HMX series



The following chapters are valid for all SanStore recorder models (LMX, MMX and HMX series)

3.4. PC system requirements for network connection

Pentium-4 2.0GHz or higher

512MB RAM

Windows 2000, ME, Windows XP, Windows Vista, Windows 7

Note on operating system:
If several users share a computer, the user account has limited functions for downloading. Please use a suitable version, depending on the computer account.

16MB video card

10/100/1000-BaseT Ethernet port

CAT-5/6 UTP cable for LAN (crossover cable for direct connect to PC)

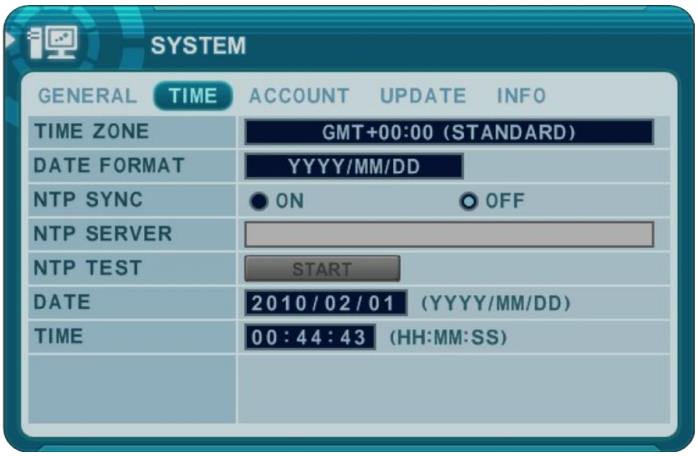
Note:
The connection and remote viewing of the DVR may not be successful on all PCs due to the variety of PCs' Internet connection settings.
Please contact the technical support for further assistance.

4. QUICK START PAGE

Factory default login is ADMIN and the default password is "**000000**"

The default user ID to run the EMS software is "**admin**" and password is "**0**"

Time & date setting:
When the DVR is powered on for the very first time, please check the data and the time.

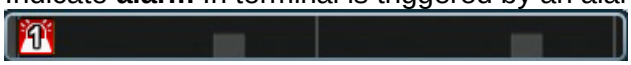


Before any other operation of the digital video recorder, it is important to setup the time and the date.

5.LIVE VIEWING

5.1. Display overview

1. **Recording Mode**
   The background colour of number will be different based on the recording status.
   1) Red: Event (motion/alarm) recording
   2) Yellow: Continues recording
   3) Black No recoding

2. **Event Indicator** (1)(2)(3)
   (1) Indicate **alarm** In terminal is triggered by an alarm sensor.
   

   To appear alarm window, press the [UP] button. This button toggles between Shows or Hide the alarm window.

   (2) Indicate **motion** detected. To disappear, press the [CANCEL] button.

   (3) Indicate **video Loss** during recording. To disappear, press the [CANCEL] button.

3. **Status bar** (1)(2)(3)(4)(5)(6)

(1) Indicates that the **built-in CD/DVD R/W** is connected. It changes to blue while it's doing backup.

(2) Indicates that a **USB device is connected on front panel.** It changes to blue while it's doing backup.

(3) Indicates that a **USB device is connected on rear panel.** It changes to blue while it's doing backup.

(4) Indicates the login( ) or locking status

(5) Indicates that **audio** data is stored. During playback it turns blue.

(6) It shows the **number of clients** which is connected to network (max. 5).

(7) Displays month, year, time and date.

(8) Shows the remaining recording time of the DVR. If the remaining HDD capacity is less than 5GB, this blue "recycling" icon will light up.

4. **Spot monitor**
Shows the selected spot number and status.

5.2. Multi-screen display and sequencing

5.2.1. Screen display

Select any camera for full screen display by pressing the number button of the desired camera.

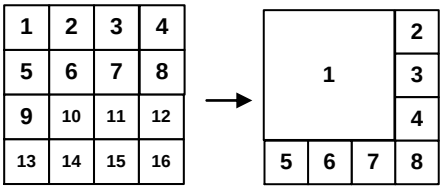
5.2.2. Multi-screen display and switch sequencing display

- Press the [DISPLAY] button to activate the multiscreen display. It changes the order as defined in the SPLIT MODE.
- To start auto sequence, press the [DISPLAY] button for 2 seconds to begin full screen sequencing.
- The sequence mode and dwell times are programmable. For detailed information about configuring those, see chapter 7.1.2). If the sequence mode is not activated, it moves to quad mode instead of sequencing.

5.3. Quick buttons for multi screen display

1. Quick multi split mode change

Press F1 button on the remote controller + <Number>
For example, press F1 button then number 8.



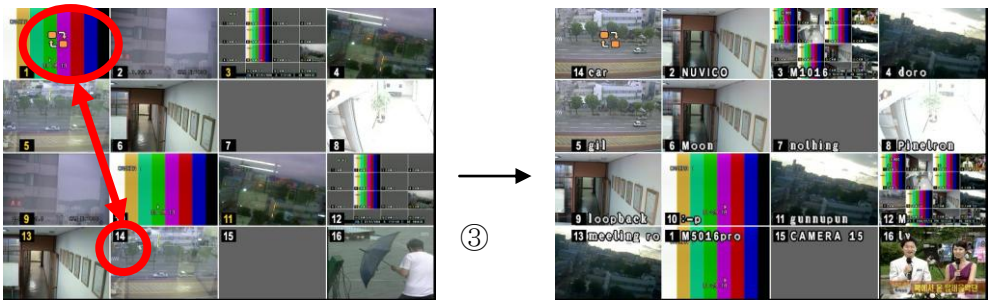
The eight channel view mode will be displayed.

Note:
4, 6, 8, 10, 13 split mode must be checked on <Spit mode> to use this function.

2. Repositioning

It is possible to reposition the camera from the bigger window with the one from a smaller one. It is used on 6, 7, 8, 9, 10, 13, 16 split mode

Press F2 button on the remote controller. Mark will be displayed.
Press Numeric button you wish to switching display.



Press the [MENU] button to exit here with saving changes.
Press the [Cancel] to exit without change.

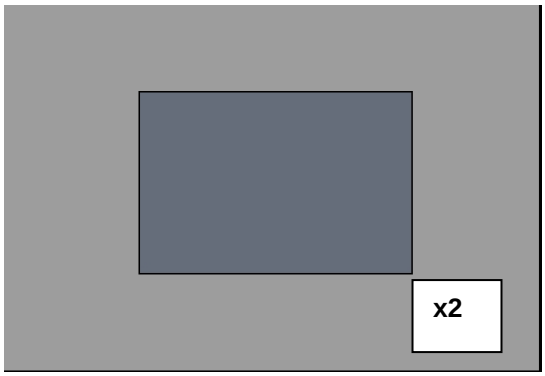
Note: Control via keyboard KSC-3505:

1.	Multi-screen (F1)	=	16+ display, 4+ display, etc
2.	Positioning (F2)	=	99+ display
3.	Auto-sequence	=	Shift +display (at the same time)

5.4. Zooming

During live view mode, it is possible to zoom into a section of the screen to get a close-up view of the screen.

1. To activate the digital zoom, select the full screen display of the camera you wish to zoom.
2. Then press the [ZOOM] button on remote control. A zoom area box pops up, as shown below: x2

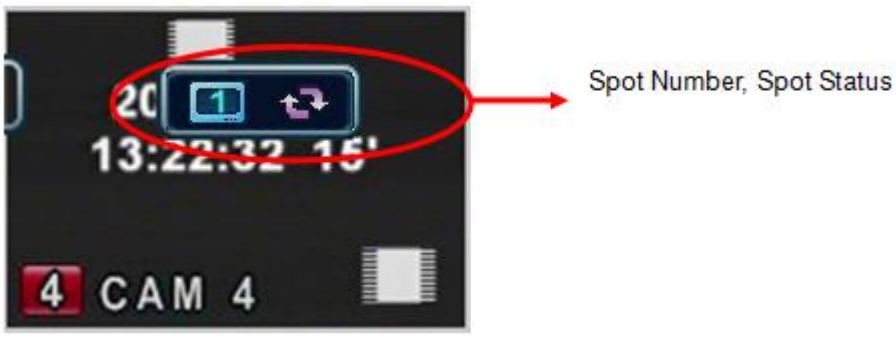


3. Move the box to the desired position using the direction buttons. ▲▼◀▶
4. Press the [CANCEL] button to return normal mode.

Note:
This function is only available in live-mode.
If the zoom button is pressed while in a multiscreen display, zoom operation is not activated.

5.5. Spot monitor

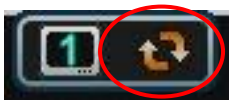
In addition to the main monitor, attaching a spot monitor enables the user to monitor specific channels independently from the main monitor. Press the [Spot] button on the remote control and the DVR will change into SPOT mode.



Procedure:

- [- +]:
  Sport out display will change to SPOT 1-2-3-1-2-3

- [Display]:
  The [Display] button is used to set the spot sequence mode and the split mode.



Spot sequence mode:
Press the [SPOT] button first and then the [DISPLAY] button for 2 seconds to toggle automatically between the cameras. The interval of the sequence can be defined by the sequence setting.

Spot split mode:
Press the [SPOT] button first and then the [DISPLAY] button to select the split mode. Split mode can be defined in the display menu.

- [Spot/Cancel]:
  Press the [SPOT button for 2 seconds or the [CANCEL] button to exit the main monitor.
  If there is no input signal, it will automatically change back to the main monitor after 5 seconds.

- [#CH]:
  Press the [SPOT] button on the remote control, then press the number button you wish to watch as full screen.

6. OPERATION

6.1. Login/Logout

You must log on to the DVR with valid password to operate the DVR. By factory default, it comes with the login account “ADMIN” and the default password “000000”.

Note:
If you are logging on for the first time, the system does not prompt you to change the default password. Therefore, it’s strongly recommended to change the “PASSWORD” when you install the DVR (also see chapter 7.8.3).

Login:

1. On the front panel or the remote control, press the [POWER] button.
2. When the DVR is powered on, it will start to scan the DVR status.
3. The live viewing screen will appear after initialisation after about 50 sec. It can be delayed if you have a defect HDD. In this case it will try to fix it for logical problems but it will show you a warning message to indicate a physical problem.
4. On the front panel or the remote control, press the [LOGIN] button. Using the mouse, click anywhere in the login dialog box.
5. The login icon will be displayed on the status bar.

Logout:
On the front panel or the remote control, press the [LOGIN] button. Using the mouse, click anywhere on the monitor. The virtual remote control will appear. The login icon will disappear on starts bar, indication that you are logged off.

6.2. Menu navigation

1. Log on to the DVR at admin level or as user with configure level.
   As a user with configure feature, the access is limited (disk and system menu).
2. On the front panel or the remote control, press [MENU]**.** Using the mouse, click anywhere on the monitor. The virtual remote control will appear.
3. Use the direction buttons [▲▼◀▶] to select the desired menu. Using the mouse, click the menu. Items selected in the menu are highligted with an arrow.

4. Press the [ENTER] button to select the menu and to display the sub-menu. Using the mouse, double click.
5. Use the left/right buttons [◀▶] to select a tab menu. Selected items change into turquois color.

Selected Not selected Inactive

Changes are automatically saved when you move between tab menus.

6. The menus are displayed with options on the left-hand column and settings in the right hand column. A cursor (highlighted menu) can be moved using the direction buttons [▲▼◀▶] .

7. Press the [-, +] buttons to change the value or select options. By mouse, use the wheel.

8. Press the [MENU] button to exit a menu with saving changes.
   Press the [CANCEL] button to exit a menu without saving the changes.

7. SETUP

7.1 Display

7.1.1 General

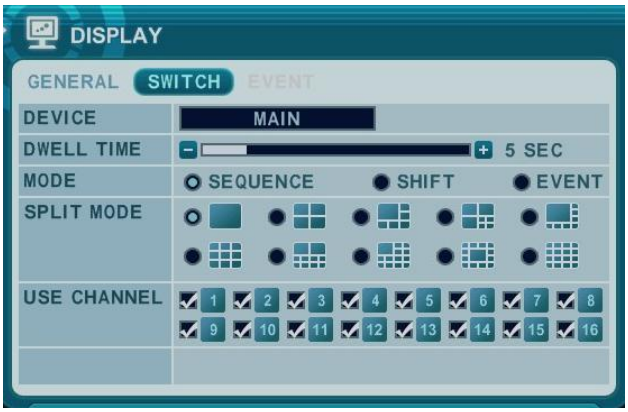
The menus are displayed with options on the left-hand column and settings in the right hand column. A cursor (highlighted menu) can be moved using the direction buttons [▲▼◀▶] .

You can change the below options using the [- +] buttons.

ITEM	ADJUSTMENT
STATUS BAR	Select “show” or “hide” to define whether the below status bar should be displayed on the main monitor or not.
CAMERA INFO	Select on-screen-display information for the camera number and title.
BORDER LINE	Select the colour of the board lines between the different cameras: Grey, white, blue, black, dark grey.
BACKGROUND	Select the background colour in case of NO VIDEO status, i.e. when no video is running. Grey, white, blue, black, dark grey.
OSD ALIGNMNET	The main video output can be displayed on a VGA or on an analogue monitor. The video can be displayed on both monitor simultaneously. Select the on-screen-display coordinates on the monitor. - Under scan: optimised display on CCTV monitors - Over scan: optimised display on VGA monitors
SPLIT MODE	Monitor display according to your selection done in SPLIT MODE.

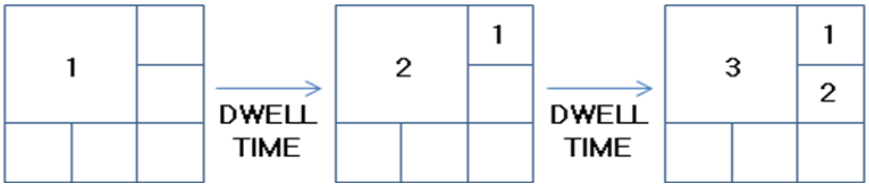
To save the changes and exit the menu, press the [MENU] button.
To exit the menu without saving the changes, press the [CANCEL] button.

7.1.2 Switch setup (monitor configuration)



1. The menus are displayed with options on the left-hand column and settings in the right hand column. A cursor (highlighted menu) can be moved using the direction buttons [▲▼◀▶] .

2. Settings
   - Device:
     Each monitor may be configured in a different way.
     MAIN → SPOT1 → SPOT2 → SPOT3 → SPOT4
   - Dwell time:
     Select the interval that each camera or multi-screen mode is alternatingly displayed. Use the [-, +] button to make your adjustment: 1-30 seconds.
   - Split mode:
     Select the appropriate monitor display you wish to make any adjustments to. These adjustments will be activated while it's in switch mode.
     - Sequence: Automatic sequence.
     - Shift: Selected camera will be displayed according to dwell time.



   - Event:
     A particulat camera is displayed in full screen or in multi-mode once an event is triggered.

- Split mode:
  Select the desired sequence mode display.
  Note:
  This function is limited to the spot monitor.

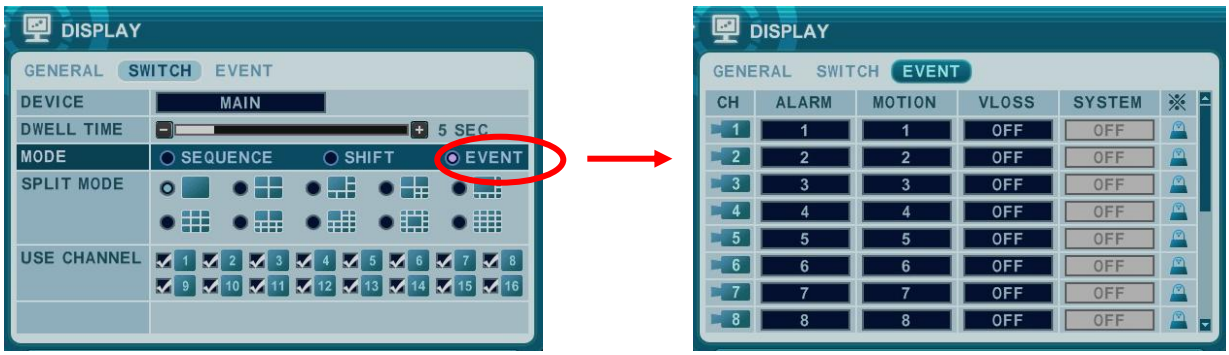
- Used channel:
  Select the cameras to be included or excluded from the automatic switching.

3. To save the changes and exit the menu, press the [MENU] button. To exit the menu without making changes, press the [CANCEL] button.

4. Press and hold the [DISPLAY] button for 2 seconds to automatically toggle between cameras on the main monitor.
   Press the [SPOT] button and then the [DISPLAY] button for approx. 2 seconds to automatically toggle between cameras on the spot monitor.

7.1.3 Event

This menu will be activated when you select the EVENT mode in the switch setting.
The event menu will allow you to customise motion, alarm and video loss.



If an event is trigged, e.g by an alarm, motion or video loss, it will be displayed on the monitor which is configured for event.

7.2 Camera

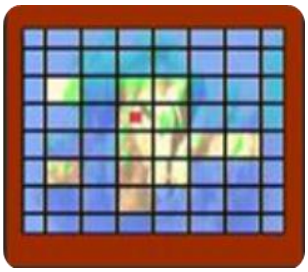
Configure the properties of the camera.

1. Press left/right buttons [◀▶] or the number button to select the desired camera.
2. The camera channel option is highlighted and the camera settings are displayed.
3. The menus are displayed with options on the left-hand column and settings in the right hand column.

Depending on your “category” selection, either “grid” or “tune” is displayed with the following setting options:

Grid:

- Motion level:
  The motion level of each camera can be adjusted by pressing buttons [-] and [+]. Default setting is 10.
- Motion grid:
  - The sensitivity can be set from 1 (low) to 20 (high). Default setting is 10
  - The respective function is highlighted. The motion can be monitored in the display window. Default settin is OFF.
- Privacy mask:
  - To be in line with privacy regulations, you may cover (mask) certain areas by a rectangle in the picture (live picture, recording and playback).
  - Default setting is OFF.
  - Press the down button on the recorder front panel or on the remote control to call up the “privacy mask” function. The grid is displayed.
  - Right-click on the icon.



To define the motion grid or the privacy mask cell-by-cell, do the following:

On the front panel or remote control, press any of direction buttons to highlight a cell in the motion detection area, and then press [+] . This area is selected and the cells are highlighted in red.

Select all. Press [Enter] or [+ -] to select.
Clear all. Press [Enter] or [+ -] to select.
Select specific. Press [Enter] or [+ -] to select.

Tune:

ITEM	DEFAULT	ADJUSTMENT
BRIGHTNESS	50	The brightness of each camera can be adjusted by pressing the [-,+] buttons.
CONTRAST	50	The contrast of each camera can be adjusted by pressing the [-,+] buttons.
COLOUR	50	The colour of each camera can be adjusted by pressing the [-,+] buttons.
SATURATION	50	The saturation of each camera can be adjusted by pressing the [-,+] buttons.

PTZ setup:
PTZ device are connected to the RS-422/485 ports located on the back of the unit.
Multiple PTZ cameras are connected by daisy-chaining the camera connection.
This DVR allows you to address and control multiple PTZ cameras individually.

Press [Enter] to configure the PTZ setup. The menus are displayed with options on the left-hand column and settings in the right hand column.

a. ID:
Configure the appropriate model and then enter the corresponding Baud rate and camera PTZ ID (address).

b. Tour group:
Preset tours allow a camera to move though a programmed sequence of PTZ presets.

Note:
The programmed tours are saved in the DVR and not in the PTZ camera.
The presets used for a tour are copied onto the PTZ camera, i.e. presets are stored in the camera.

Camera title:
You can create a unique name for each camera, respecting the following guidelines:

- Characters: A to Z. Special characters are supported by network.
  Numbers: 0 to 9.
- Length: Up to 12 characters including blanks.
- To enter a camera title, you can either use the virtual keyboard or can can press the appropriate numeric button on the remote control or on the front panel.

.

virtual keyboard

No	1x	2x	3x	No	1x	2x	3x
1	A	B	1	9	Q	R	9
2	C	D	2	10/0	S	T	10
3	E	F	3	11	U	V	11
4	G	H	4	12	W	X	
5	I	J	5	13	Y	Z	
6	K	L	6	14	.	@	
7	M	N	7	15	-	_	
8	O	P	8	16	Blank		

Entries done via remote control

No	1x	2x	3x	4x	No	1x	2x	3x	4x
1	A	B	C	1	6	P	Q	R	6
2	D	E	F	2	7	S	T	U	7
3	G	H	I	3	8	V	W	X	8
4	J	K	L	4	9	Y	Z	@	9
5	M	N	O	5	10/0	.	-	_	0

Entries done via front panel

To save changes and exit the menu, press the [MENU] button.
To exit the menu without making changes, press the [CANCEL] button.

7.3. Record

7.3.1 General

1. The menus are displayed with options on the left-hand column and settings in the right hand column. A cursor (highlighted menu) can be moved using the direction buttons [▲▼◀▶] .

2. Change the below options using the [- +] buttons.
   - Schedule use:
     This enables or disables the night zone. By default it is set to “OFF”.
   - Bootup record:
     It starts recording without pressing [REC] button when it set “ON”.
   - Disk overwrite:
     Select the record policy of the hard disk drive.
     - ON: By default, the hard disk drive will overwrite from the beginning when it becomes full (ring buffer).
     - OFF: It stops recording after HDD is full.
   - Auto delete:
     Allows you to configure when the DVR automatically deletes all data from the HDD. You can choose from the following options.
     None → 12 hours → 1 day~ 6 days → 1-4 weeks-> 30 days
   - Pre-record:
     Determines how long the recording prior to an event should last:
     5-300 sec. By default it is set to 5 sec.
   - Post- record:
     Determines how long the recording after to an event should last:
     5-300 sec. By default it is set to 10 sec.

     Note:
     The alarm/motion recording will be extended if there is another alarm/motion detection during the event recording.

3. To save changes and exit the menu, press the [MENU] button.
   To exit the menu without making changes, press the [CANCEL] button.

Approximate file size:

Quality	PAL			Unit
	720x576	720x288	360x288	
LOW	14.0	7.0	3.5	KB
MIDDLE	18.0	9.0	4.5	KB
HIGH	22.0	11.0	5.5	KB
SUPER	26.0	13.0	6.5	KB
ULTRA	30.0	15.0	7.5	KB

Note:
The above data is a theoretical calculation. Depending on the video signal or other conditions, the data may differ from reality.

7.3.2 Resolution and recording speed setting

RECORD
GENERAL MODE DAY DAY EVENT NIGHT NIGHT EV
SUM / MAX 400 / 400
CH RES., MAX F/S + CH RES., MAX F/S +
1 CIF, 25 F/S 25 9 CIF, 25 F/S 25
2 CIF, 25 F/S 25 10 CIF, 25 F/S 25
3 CIF, 25 F/S 25 11 CIF, 25 F/S 25
4 CIF, 25 F/S 25 12 CIF, 25 F/S 25
5 CIF, 25 F/S 25 13 CIF, 25 F/S 25
6 CIF, 25 F/S 25 14 CIF, 25 F/S 25
7 CIF, 25 F/S 25 15 CIF, 25 F/S 25
8 CIF, 25 F/S 25 16 CIF, 25 F/S 25

The DVR records each camera indivually and then multiplexes them.
You can set the resolution and the recording speed for each channel individually.

D1: 720x576
Field: 720x288
CIF: 360x288

You may also select identical settings for all channels. In order to do so, enter the desired settings and press the [SPLIT] buttons to copy these settings to the other channels.

Note:
At “SUM/MAX” the overall number of fps is displayed (400). If the number of pictures exceeds this maximum limit, the below warning appears. Depending on the selected settings, one or several channels are thus deactivated.

RECORD
GENERAL MODE DAY DAY EVENT NIGHT NIGHT EV
CONFIRM
MAX OVER! LAST CH WILL BE TURNED OFF
YES NO
7 CIF, 25 F/S 25 15 CIF, 25 F/S 25
8 CIF, 25 F/S 25 16 CIF, 25 F/S 25

7.3.3 Continuous/normal recording

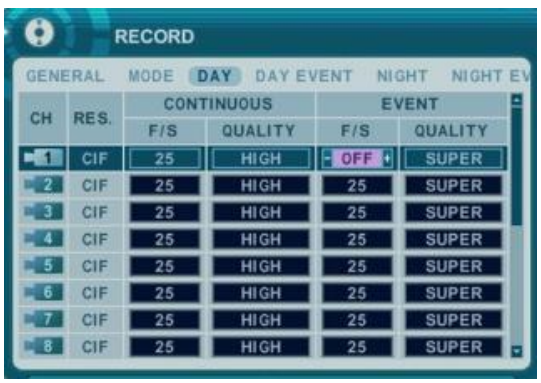
The DVR comes with a certain preset settings from the factory. Therefore once the DVR is installed, immediate recording is possible after pressing the [REC] buttons By default, audio alarm and motion recording are OFF.

The DVR records video data continuously over a 24 hour period. Different settings can be configured for each camera. To copy the setting from one channel to another, press the [Display] button.

Item	Adjustment
F/S	Select the recording speed for each camera.
QUALITY	Specify the picture quality of the recording for each camera. ultra → super → high → middle → low

Continuous recording may be done at the same time as event recording. The DVR records video data for 24 hours. If, however, an event occurs, the recording speed and the picture quality can be set differently as the continuous recording.

Example:



If you press the [REC] button, normal recording starts with a high picture quality of 3 fps. If an event is triggered on this channel, the recording speed is increased to max. 25 fps. As soon as the event is over, the normal recording continues.

Note:
Please define the event source (motion, alarm, video loss) in the “Day event” tab.

7.3.4 Event recording

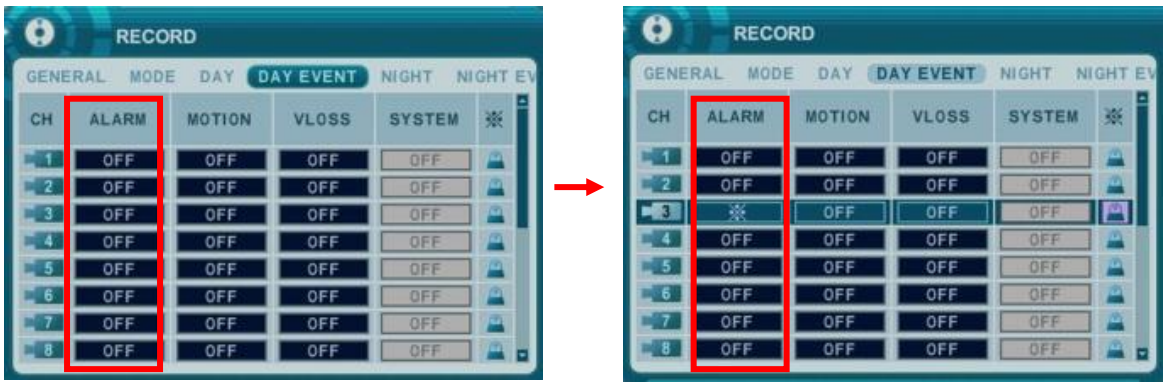
For each camera different settings can be defined by adjusing the speed and quality.
Set the continuous recording to OFF.

RECORD
GENERAL MODE DAY DAY EVENT NIGHT NIGHT EV
CH RES. CONTINUOUS EVENT
F/S QUALITY F/S QUALITY
1 CIF OFF HIGH 25 SUPER
2 CIF OFF HIGH 25 SUPER
3 CIF OFF HIGH 25 SUPER
4 CIF OFF HIGH 25 SUPER
5 CIF OFF HIGH 25 SUPER
6 CIF OFF HIGH 25 SUPER
7 CIF OFF HIGH 25 SUPER
8 CIF OFF HIGH 25 SUPER

On the [Day Event] tab, determine the settings for alarm, motion, and video loss.

1) Alarm recording

One alarm input can be configured to one channel. One camera channel can be assigned to multiple alarm inputs.

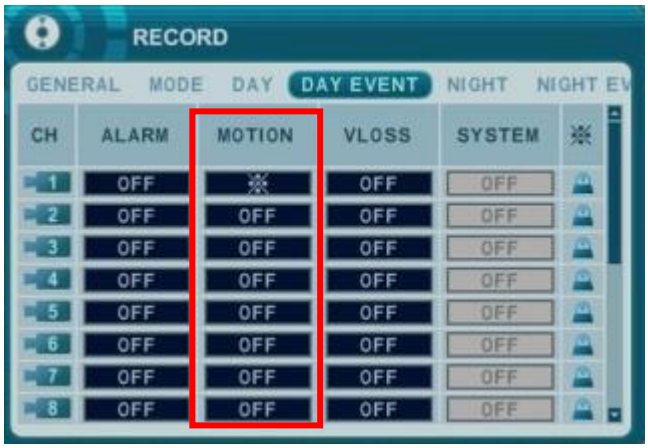

RECORD
GENERAL MODE DAY DAY EVENT NIGHT NIGHT EV
CH ALARM MOTION VLOSS SYSTEM
1 OFF OFF OFF OFF
2 OFF OFF OFF OFF
3 OFF OFF OFF OFF
4 OFF OFF OFF OFF
5 OFF OFF OFF OFF
6 OFF OFF OFF OFF
7 OFF OFF OFF OFF
8 OFF OFF OFF OFF
RECORD
GENERAL MODE DAY DAY EVENT NIGHT NIGHT EV
CH ALARM MOTION VLOSS SYSTEM
1 OFF OFF OFF OFF
2 OFF OFF OFF OFF
3 OFF OFF OFF OFF
4 OFF OFF OFF OFF
5 OFF OFF OFF OFF
6 OFF OFF OFF OFF
7 OFF OFF OFF OFF
8 OFF OFF OFF OFF

a. Press the [-, +] button to change the value or select options.
By mouse, use the wheel.

b. indicates that multiple alarm sources are selected.

2) Motion recording

One motion detection can be configured to one channel.
One camera channel can be assigned to multiple motion detections.

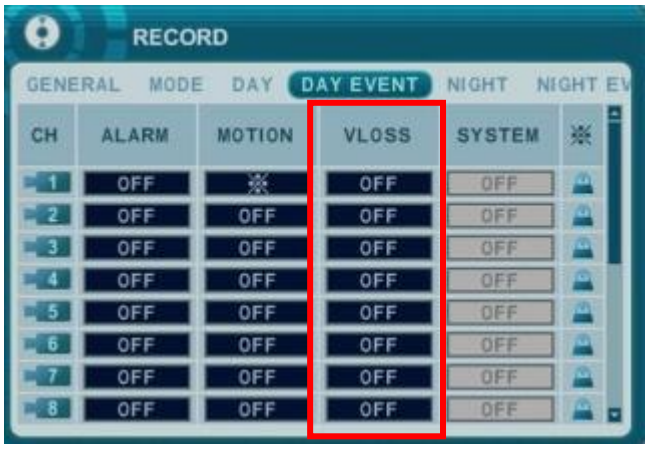


a. Press the [-, +] buttons to change the value or select options.
By mouse, use the wheel.

b. indicates that multiple alarm sources are selected.

Note:
There may be cases when the recorder's built-in motion detection function does not operate properly due to the condition of the input video signal or other factors.

3) **Video loss:**
When video loss occurs it can be configured to one channel.
One camera channel can be assigned to multiple video losses.



indicates that multiple alarm sources are selected.

4. Event edit

Press [ENTER] to edit multiple events. The menus are displayed with options on the left-hand column and settings in the right hand column. A cursor (highlighted menu) can be moved using the direction buttons [▲▼◀▶] on the remote control or the front panel.

Change the above options using the [- +] buttons on the remote control or by clicking the mouse.

7.3.5 Continuous and event (motion/alarm) recording

Both continuous and event recording can be set at the same time. The DVR records video data continuously over a 24 hour period. But when an event occurs, the recording speed and picture quality can be adjusted differently from the continuoes recording.

Example:

By pressing the [REC] button, the normal recording starts with high picture quality at 6 F/S. When an event is triggered on this channel, it changes to record with super picture quality at 25 F/S. It will be back to normal recording after the event duration has ended.

Note:
Please determine the event source, such as motion, alarm and video loss, on the DAY EVENT tab.

7.4 Schedule

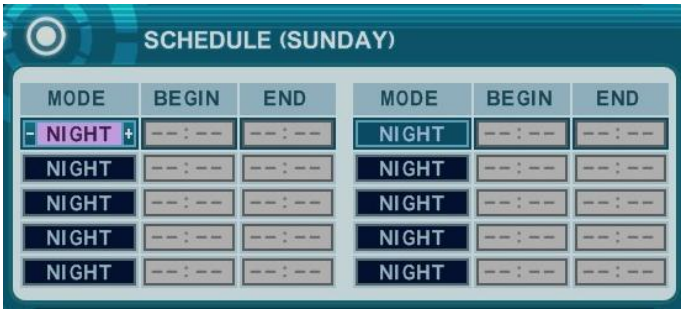
When the schedule is on, users may define their own time as well as specified date settings. A schedule is used to record selected cameras with different times, recording rates, alarm or event. By selecting “Schedule Use” as “ON”. The night mode will be activated.

7.4.1 Chart setup

The schedule chart below shows a graphical representation of the defined record mode. Night mode will be set by default. However, the schedules are only displayed if a corresponding schedule has been configured in the schedule menu.

yellow:	day setting
geen:	night setting
blue:	no recording

1) A cursor (highlighted menu) can be moved using the direction buttons [▲▼◀▶].
2) Select each day to configure, press [ENTER] or click the mouse.
3) A detailed menu pops up for the selected day, as shown below.



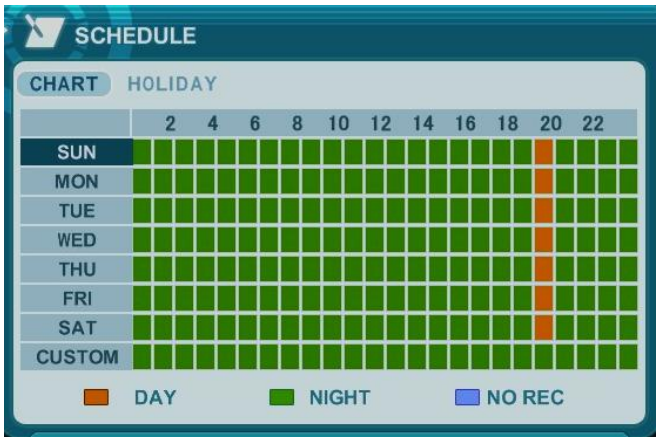
a. Use the [-, +] button to change the values.
- Mode: [Night] →[Day] →[No Rec]
- Begin: The time the recording starts.
- End: The time the recording ends. The ending time must not be before the starting time or the same as the starting time. It must be any time later the starting time.

b. To save changes and exit the menu, press the [MENU] button.
To exit the menu without making changes, press the [CANCEL] button.

c.

4) Copying schedule:

A cursor (highlighted menu) can be moved using the direction buttons [▲▼◀▶] on the desired day.
Press the [DISPLAY] button. The settings are taken over for the remaining days.



7.4.2 Holiday setup

This allows you to create up to 16 holidays. If a holiday occurs on the same date as a weekday, the holiday schedule will override the weekday schedule.

1) A cursor (highlighted menu) can be moved using the direction buttons [▲▼◀▶].
2) Select the day you wish to configure. Press [ENTER] or click the mouse.
3) Use the [-, +] buttons to change the values.
   - Mode : OFF → Day → Night → No Rec → Sun-Sat → Custom
   - Date: The date the holiday starts.
   - Days: Holiday length (1-15 days)

7.5 Disk

7.5.1 Disk manager

The Disk Manger is used to format hard disk and to assign the HDD usages such as back up or mirroring.

1. Select

- The menu displays all installed HDDs or ODDs with different options.
- Press the up/down [▲▼] buttons to highlight the HDD or ODD, then press the [-, +] buttons to confirm your selection.
- Device and size:
  This information lists the installed drives and their respective capacities.
- Status:
  - CD/DVD: CD or DVD is installed for back up purpose.
  - Unknown: New installed disk.
  - Empty: Formatted HDD but not used in current DVR.
  - Recording data: HDD stored recording data but not used in current DVR.
  - Backup data: HDD stored backup data.
  - Other data: Neither backup nor recording data, including AVI file.
  - Damaged

Note:
Disconnected disks will not be displayed in the disk menu.

2. Action:

- None:
  Default setting.

- Assign to stream disk:
  Initialise the selected HDD. It formats the drive and all data on the drive is erased. External SATA HDD can be used to extend HDD capacity. The selected HDD will be moved to [Recording Disk] after formatting.

- Assign to stream & mirror:
  This menu will be activated when you work with 2 HDDs at the same time. It will automatically configure one HDD for recording and the other one for mirroring (=duplicating).

- Initialize for backup:
  The selected device or external HDD is formatted for backup purpose.

- Link record disk:
  This function is used for additional, identical model HDDs without formatting.

  Note: The following limitations apply to this function:
  A. The DVR should be empty, i.e. no HDD included. If “Recording disks” is active, it won’t work.
  B. The used HDD should be from same series. It’s not working with HDDs of different series.
  C. There should be no time duplication for the HDDs.

Device	ODD		HDD	
	CD/DVD±R	CD/DVD±RW	SATA	USB
can be formatted	O	X	X	X
can be formatted on a PC using FAT 32/NTFS file system	O	X	X	X
must be formatted on DVR before backing up or exporting data to the device	O	O	X	O

Symbols: x = yes, O = no

Notes:

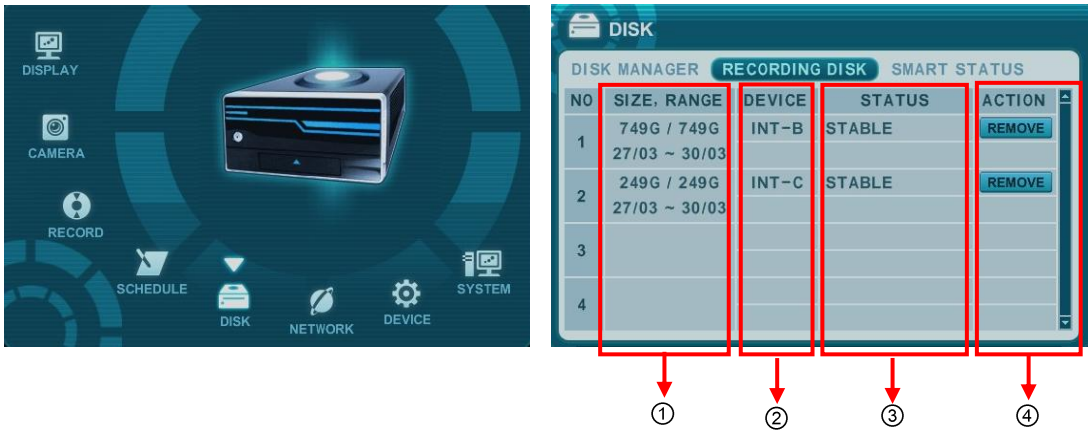
- A USB flash memory is working without formatting
- If a FAT32/NTFS is installed for formatting an external USB device, the "Assign to stream disk" feature is disabled. It's limited to backup only.

- Press the [+] button to start the selected action

- To save changes and exit the menu, press the [MENU] button.
  To exit the menu without making changes, press the [CANCEL] button.

7.5.2 Recording disk (HDD)

This information lists the installed drives and their respective capacities which are currently used for recording.



3. Size, range:
   It displays the currently recorded data size, the HDD size, the stored data range and the status of the recording.

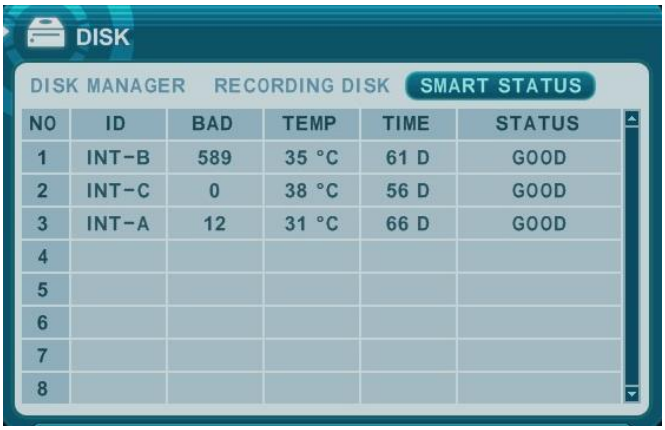
4. Device:
   It displays whether the HDD is master or slave for mirroring. The upper device is the master and the other one is the slave. Once the slave HDD is 100% synchronised, the master HDD can be removed.

5. Status:
   - Stable: The HDD is in stable status.
   - Re-sync: All pending buffered data are copied to a new drive.
   - Recover: All pending buffered data are copied to a slave drive.

6. Action Remove HDD.
   The dialogue box “Are you sure?” opens.

Press the up/down [◄►] buttons to select “YES” or “NO”, then press the [-, +] button to confirm your selection.

7.5.3 SMART status



It displays HDD information such as bad sector, temperature or HDD running time. SMART information may be slightly different, depending on the HDD manufactures.

It is recommended to exchange the HDD when the HDD status “Pre-fail” is indicated.

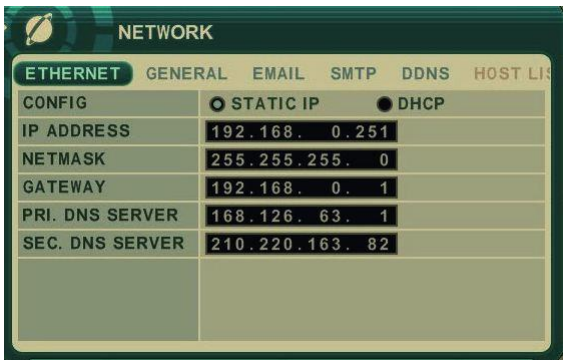
Note:
Please see the following status explanations:

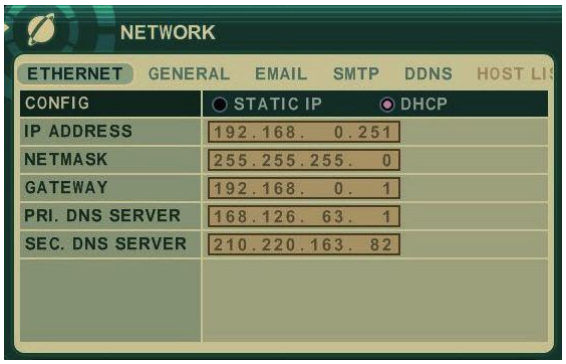
Status	**Explanation**
Good	Good
Pre-fail	Alerts that there may be a problem
Past pre-fail	“Pre-fail” has occurred before
Fail	Find problem / need to replace

7.6 Network

The IP address can be set as static or as dynamic.
The static service consists of an IP address that remains constant for the duration of the contract of the internet service. The dynamic service consists of an IP address that frequently changes every time a new connection is made through the provided modem, or recurrently in a given period of time. Though most internet service providers offer both solutions, this manual will distinguish the two solutions according to the commonly available service type to configure the DVR for the networking purposes.

7.6.1 Ethernet

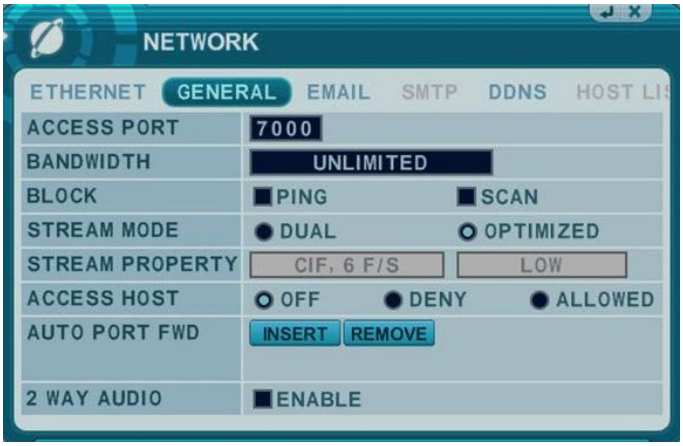




1. **Static IP:**
   If the static IP is selected, the following settings are available:
   - IP address: Enter the static IP address
   - Netmask: Enter the IP address of subnet mask.
   - Gateway: Enter the IP address for the Internet gateway server.
   - PRI.DNS server: Verify the name of the domain name system.
   - SEC.DNS server: Enter the IP address of the backup domain name system (DNS) server that the DVR will use to convert name to IP address. This server is used if the primary DNS server fails.
     Note: If you do not set up the DNS server correctly, it will may have problems to send e-mails.

2. **DHCP: Dynamic Host Configuration Protocol.**
   It is automatically set by a local DHCP if there is one (i.e. a local router). If the DHCP is set to “ON”, the IP address, gateway and subnet mask will be assigned by the DHCP server.(i.e.the local area network router).

7.6.2 General



Access port:
Select a value from 0001 to 9999.
Enter the port number that the client will use to communicate with the DVR over the Internet. The default port is 7000. It is recommended to use a port >1,000.

Bandwidth:
Select the network bandwidth to limit the amount of network resources allocated to client connection.The default is unlimited: 4 KBPS - 8 MBPS

Block:

- **Ping:**
  No response for ping. Default is OFF.
- **Scan:**
  No response for auto scan. Default is OFF.

Stream mode:
For stream mode, choose between “dual” and “optimized”.

Dual: Video/audio streaming with a defined quality. It is independent from the recorder configurations.

Maximum dual streaming for network:

PAL	Available F/S per channel		
16 channels	CIF, 6 F/S		
8 channels	CIF, 6 F/S	CIF, 12 F/S	
4 channels	CIF, 6 F/S	CIF, 12 F/S	CIF, 25 F/S

Optimized: Video/audio streaming with maximum data throughput. It depends on the recorder configurations. It is recommended to use the manufacturer’s method to achieve a better network/streaming rate.

Example:

- Recordings at 25 CIF: 25 F/S are sent.
- Recordings at 6 CIF: 19 F/S are sent (and not 6!)
- Recordings at 1 CIF: 24 F/S are sent.
- Recordings at 20 CIF: 20 F/S are sent.

Stream property:
It is activated if you have selected “dual streaming”.

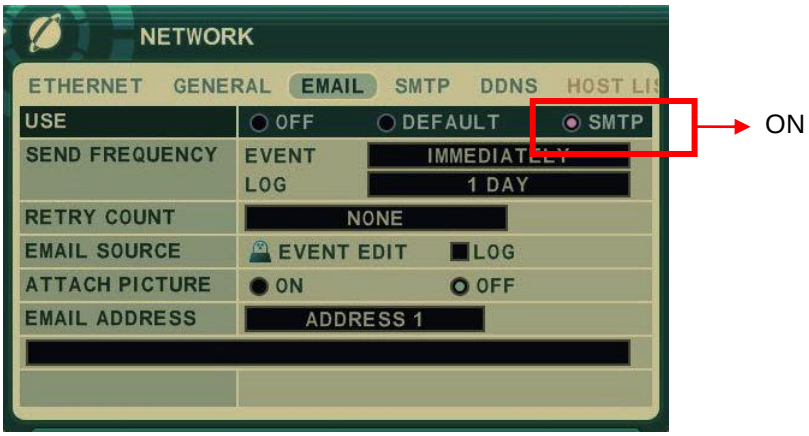
Access host:
Options are “Off”, “Deny” and “Allowed”. If one of these 3 options has been selected, the tab menu “host” become active.

Auto port FWD:
Click on “Insert” to automatically open ports for router communication with UPNP compliance.

2 Way Audio:
The function „2 Way Audio“ between recorder and EMS software is supported.
Tick the “Enable“ box.

7.6.3 E-mail

This DVR allows you to specify the events that generate a notification. An e-mail notification can be sent if an event occurs, e.g. alarm or motion detection.



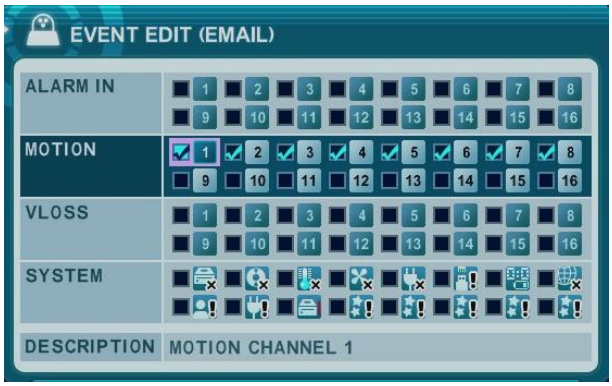
The menus are displayed with options on the left-hand column and settings in the right hand column. A cursor (highlighted menu) can be moved using the direction buttons [▲▼◀▶].

1. Use:
   Set the e-mail notification to ON or OFF. The default is “OFF”. Press the [-, +] button to select (or click with the mouse).
   - Default:
     Factory default settings for e-mail notification and e-mail settings.
   - SMTP:
     If you select SMTP, you can define your own e-mail settings.

2. Send frequency:
   The e-mail notification will be sent in certain intervals.
   - Event: Immediately, 10 minutes, 1 hour, 1 day
   - Log : 1 day, 1 week

3. Retry count:
   Select the number to try to send e-mail again if the sending has failed.

4. E-mail source:
   An event has to be specified by notification options.
   - Event edit:
     Notifications can be enabled for each channel for alarm, motion, video loss and system (HDD failure, record failure, HDD full, etc). Press the [- +] button to select.



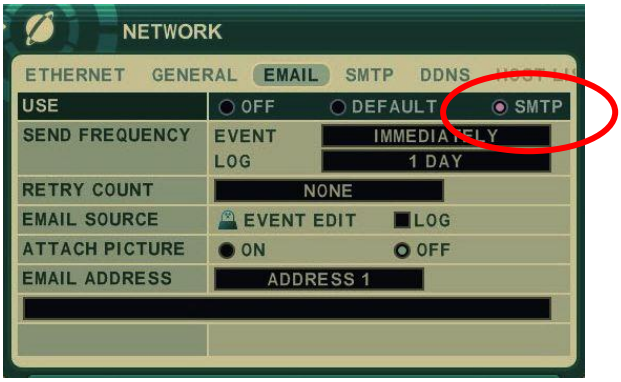
   - Log:
     This DVR will mail log lists in defined intervals.

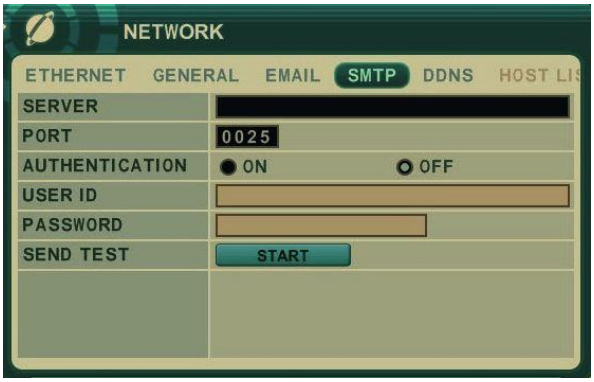
5. Attach picture:
   While you are in recording mode, pictures can be attached to the e-mail.

6. E-mail address:
   Up to 5 mail addresses can be defined for e-mail notifications.

7.6.4 SMTP

This menu will be activated when you check “SMPT” in the e-mail settings.





1. Server:
   Enter the e-mail server name or the IP address. Use the virtual keyboard or press the appropriate numeric button on the remote control or the front panel.

2. Port:
   Define the port that the SMTP server will communicate through. By default, it set to 25.

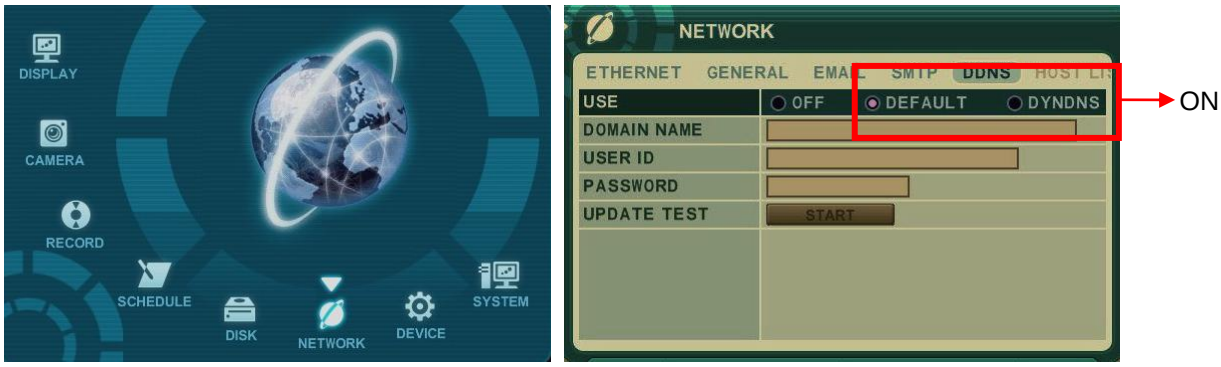
3. Authentication:
   Check this to “ON” if your mail server requires authentication.

4. User ID & password:
   Enter the user ID/name and password for the SMTP server (entry is not case-sensitive).

5. Send test:
   Test to send e-mails.

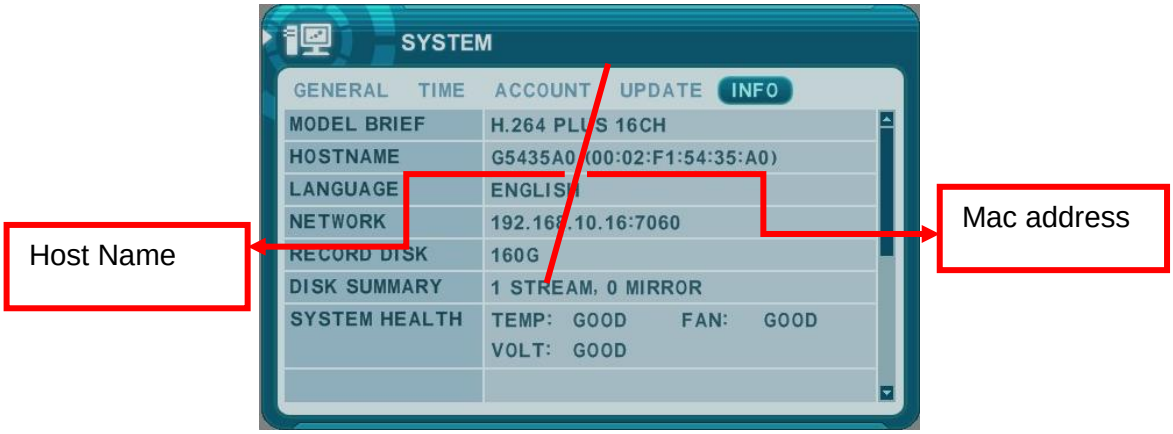
6. To save changes and exit the menu, press the [MENU] button.
   To exit the menu without making changes, press the [CANCEL] button.

7.6.5 DDNS (Dynamic DNS)



The menus are displayed with options on the left-hand column and settings in the right hand column. A cursor (highlighted menu) can be moved using the direction buttons [▲▼◀▶] .

1. Use :
   Set DDNS to “ON” or “OFF”. The default is OFF. Press the [-, +] button to select. Using the mouse, click the option to select DDNS provider.
   - Default:
     Default it is provided by the manufacture. We offer DDNS service for remote at http://www.dvrhost.com
     If you are using “Default” for DDNS, you do not need to setup anything. It’s not allow for you to create a host name. It’s provided by the DVR. Press the [Info] button on the remote control or on the front panel, then check your host name.



Example: http://G747474.dvrhost.com:7400

- DYNDNS:
  To use your own domain name service or “dyndns.com”

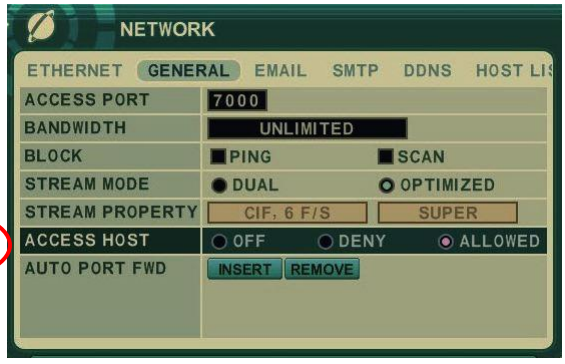
2. The following settings are only needed if you are NOT using the “Default” mode:

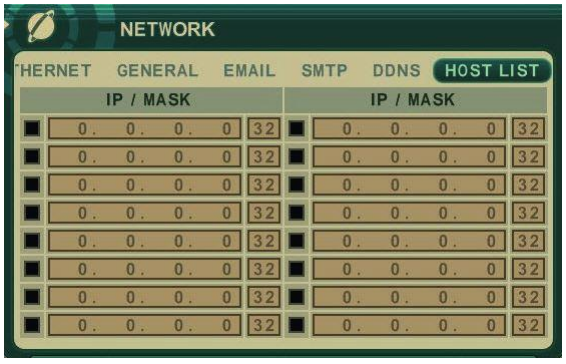
   a.) Domain name:
   Enter the name you have used for the DDNS web configuration.
   b.) User ID:
   Enter your user ID.
   c.) Password:
   Enter your password.
   d.) Update test:
   Click the update test button to confirm the connection. A success message will appear.

To save changes and exit the menu, press the [MENU] button.
To exit the menu without making changes, press the [CANCEL] button.

Note:
Please write the password in capital letters (small letters are automatically changed to capital letters).

7.6.6 Host List





At” Network -> General” select “Allowed” in the “Access host” field. The above host list comes up. Here you can enter the IP addresses of the computers which are allowed or not allowed (denied) to access the DVR.

7.6.7 Router and port forwarding

The majority of networks often consist of a single IP address which shares the Internet access through a router. This IP address may be any external (public) static IP address or any dynamic IP address issued by the Internet service provider.

The purpose of a router is to enable multiple personal computers and any other devices that require Internet connection to access the Internet simultaneously. Most routers by default enable (open) commonly used ports so that mainstream applications such as Hypertext Transfer Protocol (HTTP, port 80), File Transfer Protocol (FTP, port 21), Telnet (port 23) and Post Office Protocol 3 (POP3, port 110) are used.

To solve the firewall problem and let visitor into the network, the user instructs the router to allow traffic to pass through on a given port. This is known as “Port Forwarding”, as the router forwards (directs) all Internet requests on a specific port to the local machine. With port forwarding, external visitors are able to connect to the DVR while other internal devices remain protected.

Here is the example of DVR connection.

Network	Router	DVR IP Setting	PC connect position ① LAN			PC connect position ② WAN		CF
			A	B	C	B	C	
Static IP	use	STATIC	○	△	X	★	★	
		DHCP	○	▲	X	☆	★	Check the DVR IP and set it to router.
	x	STATIC	○	○	○	○	○	
		DHCP						N/A (need local DHCP server)
DHCP	use	STATIC	○	△	X	★	★	
		DHCP	○	△	X	★	★	Check the DVR IP and set it to router.
	x	STATIC						N/A
		DHCP				△	△	PPPOE is not supported

1) Description of location.

- LAN: Connect via local IP. If you are connecting within your network, you only need to enter the IP address of the system (ex. 192.168.0.50)
- WAN: Connect via DDNS. If you are connecting from outside your network, use the DDNS to configure the S/W.(Ex. L123456.dvrhost.com).
- WAN: Connect via IP address. If you are connecting from outside your network and if you know your static IP address, use the IP address. (Ex. http://124.137.23.72:6000)

2) Description of symbols.

○ : Connected.
x : Not able to connect

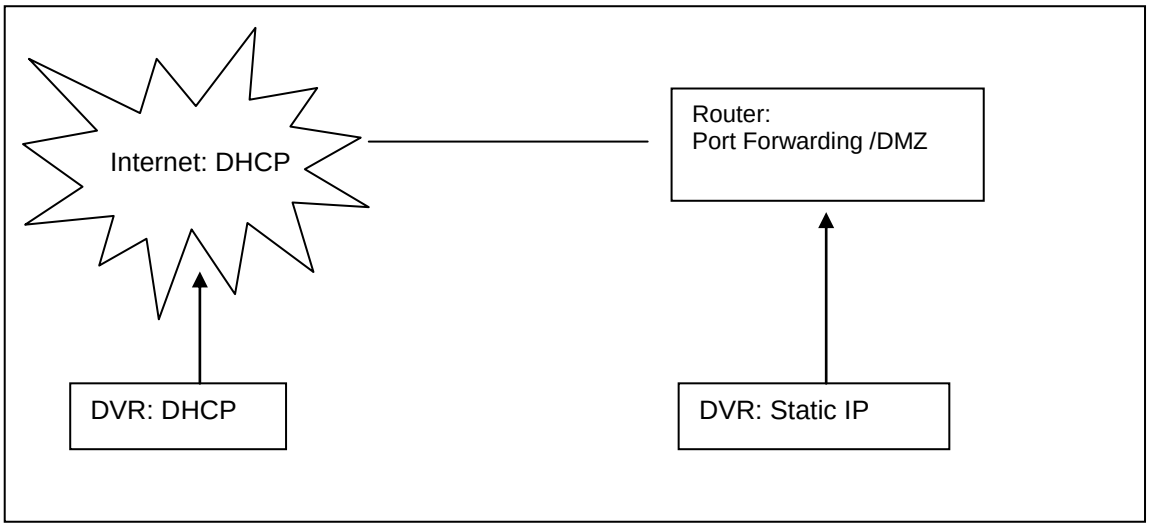
△: There are some limitation depending on the router or network connection.

★ : Need to use Port Forwarding

3) Description of colour.

Yellow: Recommended
Grey: Not available
White: Depends on router or network condition.

How to use DVR for DHCP:

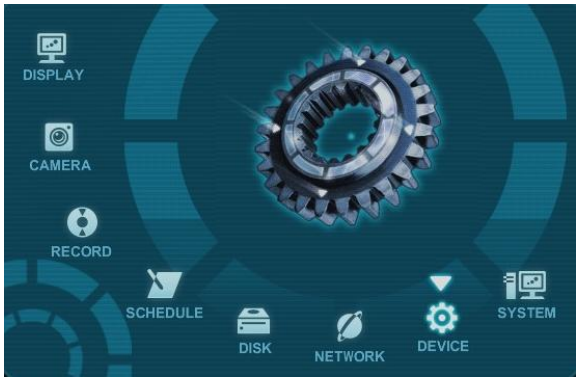


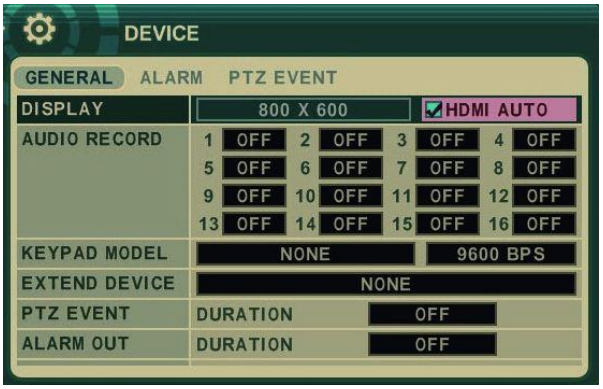
Note:
Each router has different port forwarding settings. Please refer to the router manual or contact to your router manufacture for assistance.

7.7 Device

7.7.1. General

This DVR support 4, 8 or 16 channels (depeding on the model) for audio, alarm inputs and 4 relay outputs. A HDMI output is supported, too.





The menus are displayed with options on the left-hand column and settings in the right hand column. A cursor (highlighted menu) can be moved using the direction buttons [▲▼◀▶] .

1) Display:
   Please define the output resolution.
   The DVR automatically detects and set correct video resolution.
   800 x 600 → 1024 x 768 → 1280 x 720 → 1280 x 1024 → 1600 x 1200 → 1680 x 1050 → 1920 x 1080I → 1920 x 1080P

   HDMI Auto:
   If the “HDMI Auto” function is activated, the HDMI resolution on the monitor is automatically recognised and adjusted. If a VGA monitor is used, it may happen that it doesn’t support a high-resolution and thus the notification “Not supported format” is displayed.

   Note:
   - This video resolution will apply to both HDMI and VGA outputs. If the VGA monitor is not able to support high resolution, it might happen that no video is displayed.
   - In case of displaying video on HDMI and VGA output simultaneously, please set the lowest resolution.
   - If both HDMi as well as VGA are to be used, please make sure not to exceed the maximum VGA resolution of 1280x1024 (4:3) or 1280x720 (16:9). Moreover, the box “HDMI Auto” must be unchecked.

2) Audio Record:
   Set the audio recording to “ON” or “OFF”. The audio data is always recorded in real-time whereas the video data can be recorded in various modes including real-time. There may be a slight delay in synchronisation of the audio and video data.

3) Keypad Model:
   Select the joystick and the Baud rate.

   Note:
   Default device: SANTEC KSC-3505

4) Extend Device:
   Select the desired output device.

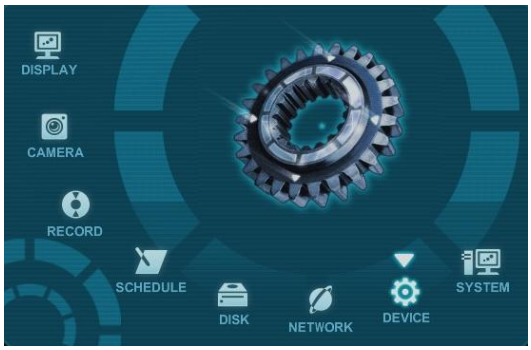
5) PTZ event:
   Select the PTZ event duration: OFF, 1-5 sec.

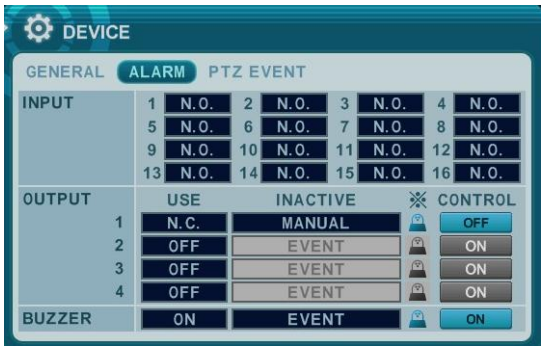
6) Alarm Out:
   Select the alarm duration: OFF, 1-5 sec.

To save changes and exit the menu, press the [MENU] button.
To exit the menu without making changes, press the [CANCEL] button.

7.7.2 Alarm

This DVR support 4, 8 or16 (depending on the model) alarm inputs and 4 relay outputs.
One alarm input can be configured to one relay output.
One relay output can be assigned to multiple alarm inputs.

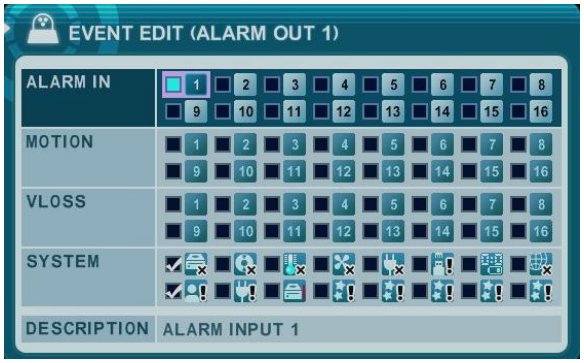




1. Use the left/right buttons [◄►] to select the tab “ALARM”. The menus are displayed with options on the left-hand column and settings in the right hand column. A cursor (highlighted menu) can be moved using the direction buttons [▲▼◄►] .

2. Input:
   Change the input type. Use the [-, +] button to change the values.

3. Output:
   You can configure how the relay outputs are controlled: automatically or manually.
   - Use: Change the output type.
   - Inactive:
     a. Event (automatic): Relay out is turned off when the event expires. This setting is configured globally.
     b. Manual: Relay out is turned off from this menu (Control).
   - Event Edit
     Press [ENTER] to edit multiple event. The menus are displayed with options on the left-hand column and settings in the right hand column. A cursor (highlighted menu) can be moved using the direction buttons [▲▼◄►] on the remote control or on the front panel.



Change the below options using the [- +] buttons on the remote control.
The following system events can be used:

- HDD disk failure
- Record system failure
- Temperature warning.
- Fan lock warning
- Voltage warning
- Low RTC battery warning
- External device event
- Network link disconnected
- Admin login
- Power recovery
- Disk full
- Invalid password in sequence
- Auxiliary event (reserved)

- Control:
  Manual control for relay output and buzzer.

4. Buzzer
   - Use:
     - ON: The buzzer sounds if an alarm is triggered. The buzzer will sound for the duration of the record time. This buzzer is connected to the alarm output. Please configure the alarm output to “ON” to activate the alarm buzzer.
     - OFF: Disables the alarm buzzer function.
   - Inactive:
     Turn off the buzzer.
     - Event (automatic): The buzzer is turned off when the event has finished.
     - Manual: The buzzer can be controlled by this menu <Control>.

5. To save changes and exit the menu, press the [MENU] button.
   To exit the menu without making changes, press the [CANCEL] button.

7.7.3 PTZ event

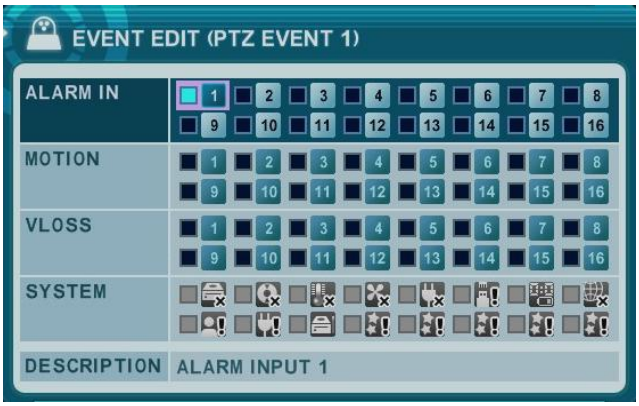
If an event is triggered by an alarm, motion or video loss, this DVR sends a preset command to the PTZ camera. PTZ option must be enabled and a protocol must be assigned to the camera channel.

1. Channel:
   Select the desired PTZ camera.

2. Active:
   Configure the PTZ action: none → go to → tour

3. Inactive:
   Configure the command once an event has ended: none → go to → tour

4. Event edit:
   Press [ENTER] to edit multiple events. The menus are displayed with options on the left-hand column and settings in the right hand column. A cursor (highlighted menu) can be moved using the direction buttons [▲▼◀▶] on the remote control or the front panel.



   Note:
   Do not set up motion detection on the PTZ camera for a PTZ event. The signal will be looping. Use the [- +] buttons to change the values.

5. To save changes and exit the menu, press the [MENU] button.
   To exit the menu without making changes, press the [CANCEL] button.

7.8 System

7.8.1 General

1. Control ID:
   Each DVR that is preconfigured with the control ID, can be operated by the remote control. To select the DVR to be controlled with the remote control, press and hold the DVR ID button. While holding the DVR ID button, press the appropriate DVR ID number.

   Example:
   Enter “05” for DVR ID 05, enter “43” for DVR ID 43, and so on. If you enter “00”, all DVRs – irrespective or their ID – will be controlled at the same time.

2. DVR Name:
   Assign a name to the DVR, especially when you have several DVRs in the network.

3. Key tone:
   By default, the DVR emits a beep every time a button is pressed. Set the key tone to “OFF” to turn the button beep off. Default setting is “ON”

4. PB Deinterlace:
   - ON: Reducing image flickering but less picture quality.
   - OFF: Better picture quality for still image but having flicker for moving pictures.

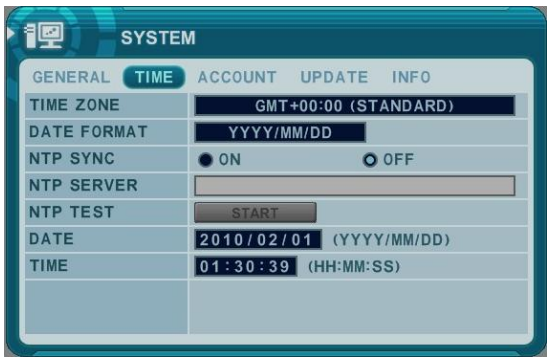
5. Auto logout:
   You can configure the DVR to automatically log out users. Default setting is “OFF”. [OFF → 1 minute → 3 minutes → 5 minutes → 10 minutes]

6. SMART monitor:
   Turn ON or OFF to display HDD information.

7. Key sensitivity:
   Set the sensitivity of the keys on the DVR front panel.

7.8.2 Time

Make sure to set up your date and time prior to start recording.



Use the left/right buttons [◂▸] to select the tab menu “Time”. The menus are displayed with options on the left-hand column and settings in the right hand column. A cursor (highlighted menu) can be moved using the direction buttons [▲▼◂▸]. Press the [-, +] buttons to change the values.

1. Time zone:
   Select the time zone in which the DVR is located. The DVR contains DST setting (Daylight Saving Time). If you choose a time zone with DST, there is no change in the system time stamp for recorded data. When the Daylight Saving Time ends, the DVR automatically adjusts the time.

2. Date format:
   Select the format to display the date:
   MM/DD/YYYY → DD/MM/YYYY → YYYY/MM/DD

3. NTP synchronisation:
   The internal time of the DVR can be synchronised with an external time source using NTP (Network Time Server). If the NTP option is ON, the date and rime option are inactive.

4. NTP server:
   Allows you to use a public or private NTP server. Enter the IP address of the sever or the domain. The default setting for a public server is “pool.ntp.org”.
   Note: Time synchronization intervals: min. 64 sec, max. 1024 sec

5. NTP test:
   Test whether the NTP server works properly.

6. Date and time:
   Set the current time and date.

To save changes and exit the menu, press the [MENU] button.
To exit the menu without making changes, press the [CANCEL] button.

7.8.3 Account

Use the left/right buttons [◄►] to select the tab menu “Account”. The menus are displayed with options on the left-hand column and settings in the right hand column. A cursor (highlighted menu) can be moved using the direction buttons [▲▼◄►]. Press the [-, +] button to change the values.

1. User/Name:
   The DVR comes preconfigured with ADMIN. Select a user 1-5, and then activate it.
   Name length: up to 10 characters
   Characters: A to Z (no special characters), numerals 0 to 9

2. Privilege:
   The admin user can define each user’s privilege such as playback, PTZ control, backup, configuration (except for disk and system), recording stop, system shutdown.

3. Network:
   The DVR comes pre-configured with a system password to either enable network access for the administrator or to deny access for users. It is possible to create different passwords for network access.
   Password length: up to 10 characters.
   Characters: A to Z (no special characters), numerals 0 to 9.

4. Channel
   Each user can be assigned to specific cameras.

5. Password
   Enter the 6 digits for the new password, and then re-enter the same password in the “confirm” section. The asterisks represent each entered character.

To save changes and exit the menu, press the [MENU] button.
To exit the menu without making changes, press the [CANCEL] button.

7.8.4 Update

1. Download the latest firmware file and copy it to a USB Flash memory stick in the root directory.

2. Connect the USB stick into one of the USB ports. If you are currently recording, please stop the recording.

3. Using direction button [▼], move to [START]. Press the [+] button to look for the upgrade file. If the DVR finds a valid update file, the update menu is activated.

4. Press the [-, +] button to find proper upgrade file. Version information is displayed. If there are several valid update files, please select the desired file.

5. Using direction button [▼], move to [START]. Press [+] button to start the update. While it's updating, an "in progress" message is displayed.

6. After the update process is completed, a "Restart" message is displayed. Press the [+] button to restart.

   Note:
   Do not switch off the DVR or press any key during the update process.

7.8.5 Info

No adjustments can be made here but only system information is displayed.
Press the [INFO] button on the remote control or on the front panel. The system information is displayed. Use the direction button to move to the next page.

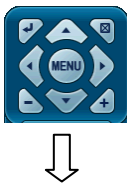
8. PAN/TILT ZOOM (PTZ) CONTROL

PTZ control is available to support dome cameras. The PTZ option must be configured for each camera channel.

The layout of the PTZ interface is identical to the layout of the front of the DVR or the remote control. The menu button is the guide anchor position for all other buttons. When in PTZ interface mode, all buttons are used for PTZ related operation.

8.1 PTZ menu

To activate the pan/tilt control, select the full screen display of the camera you wish to control.
Then press the [PTZ] button. The following window pops up:



INDICATOR	ACTIONS
[ENTER] [CANCEL]	Press this button to display the “HELP” menu. Press the [ENTER] button again or the [CANCEL] button to cancel the “Help” menu. Press this button to cancel the “PAN/TITL” operation.
[MENU]	Press the [Menu] button to control all functions via the PTZ interface. Press this button again to access the short-cut menu.
Directions	To tilt up/down. To pan right/left.
decrease/increase	To zoom in/out.

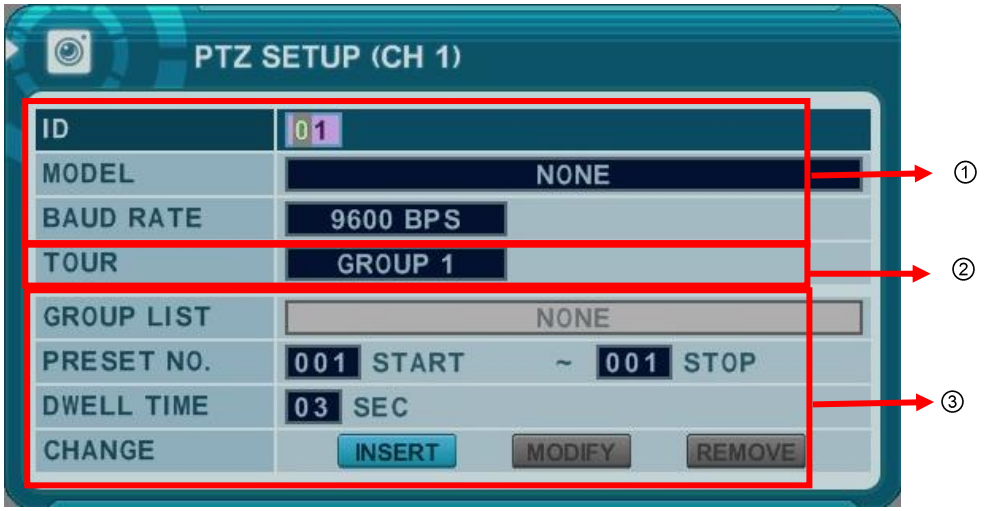
Control via mouse:
Using the mouse, the PTZ menu and control box are displayed as shown below.
Use the mouse cursor instead of the direction buttons to move around.

8.2 Preset and tour

Button	Function
	Set the preset position. Press the [SPOT OUT] button on the remote control. Move the PTZ camera into the desired position. Press the [Preset] button. “Custom 1” will illuminate. Set the number for the preset position. Press the [ENTER] button to save the presets and to exit the menu.
	Go to the preset position. Press the [INFO] button on remote the control. Press the [Go] button. Enter the desired preset number and the press the [ENTER] button.
	Start auto tour. Press the [BACKUP] button on the remote control. Press the [Auto Tour] button. Press the [+] button and the enter the range of presets. Press [ENTER] to confirm.

Tour Group

A pre-defined tour group allows a camera to move through a programmed sequence of PTZ presets.



1) Communication settings.
   Configure the appropriate camera model by entering the ID and the corresponding Baud rate. Please also refer to the PTZ camera manufacturer's instruction manual for proper settings.

2) Tour:
   There are 4 programmable tours. Using the [- +] button to choose a tour:
   [Group 1→ Group 2 → Group 3 → Group 4]

3) Tour settings:
   a. Group list: Each tour group consists of up to 10 preset position.
   b. Preset number: Enter the start and end of a preset for the group.
   c. Dwell time: Set the pause between end of current preset and the start of the next preset.
   d. Change: Add, modify or clear the tour list.
   e. Repeat steps b) to d) for any additional tour.

8.3 Custom functions

Button	Function
	First PTZ custom function: [DISPLAY] button on the remote control
	Second PTZ custom function: [ZOOM] button on the remote control
	Third PTZ custom function: [PTZ] button on the remote control

8.4 Auto pan, auto tilt, power

Button	Function
	Auto pan: [STOP] button on the remote control
	Auto tilt: [REW] button on the remote control
	Power on/off: [FF] button on the remote control

8.5 PTZ camera models

No.	Model Name	3x	Speed	Preset	Go to	Tour	A. Pan	A.Tilt	Pat	Me	Esc/ Enter
1	PELCO, D	o	o	o	o	o	o		o	o	
2	RVT, EZ Protocol	o	o	o	o	o			o	o	o
3	PELCO, P	o	o	o	o	o	o		o	o	
4	Hitron, Fastrax 2	o	o	o	o	o			o	o	o
5	Bosch, Auto Dome										
6	SANTEC VDC-258	o	o	o	o	o			o	o	o
7	SANTEC VDC-610	o	o	o	o	o	o		o	o	

Note:

The pan/tilt speed can be set from 1-8:
1 = slow
8 = fast

9.PLAYBACK / SEARCH

The DVR supports 2 playback modes: playback and search. The DVR offers a variety of search functions which enables you to quickly and efficiently locate and review a specific period of time in the database. You can search for date/time, event and log.

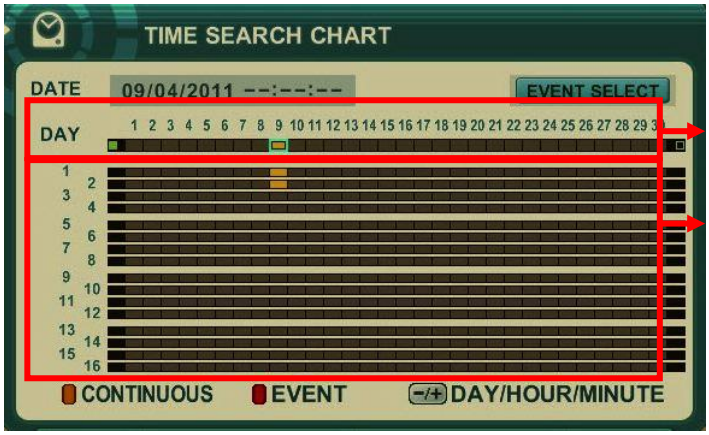
9.1 Playback

When the [PLAY] button is pressed, the DVR starts to playback any recorded data from the latest data. When the DVR reaches the end of the recorded data, it will stop the playback. During playback, the DVR may be played back in reverse, paused, speed search with up to 16 times the normal speed, or move picture by picture.

9.2 Time search

9.2.1 Multi channel playback

1. Press the [Time Search] button to access the time search table. The day will be displayed. The data are colour-coded by category:
   red = event
   yellow = normal



2. Use the [- +] button to navigate between day and hour. If you use the mouse, work with the wheel.
   Note:
   Use the [PLAY] button to move at the end of the data.
   Use the [REWIND] or [FF] button to move to the next page.

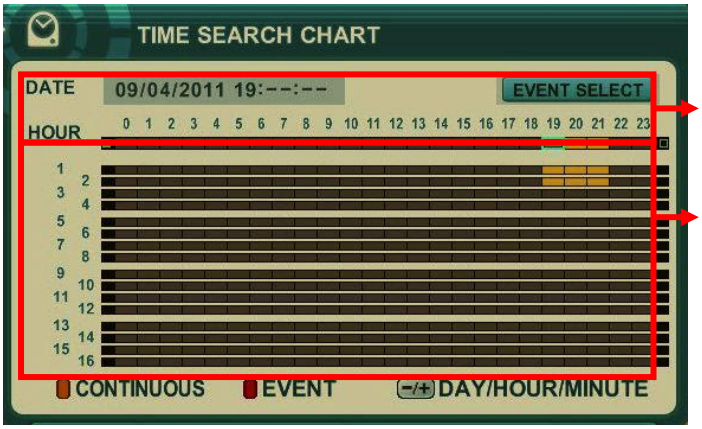
3. To review all channels, press the [ENTER]. Using the mouse, double click.

4. The DVR will start the playback mode, displaying all 16 channels. Any channel number or the [DISPLAY] button may be pressed to change the display mode.

9.2.2 Preview search (single channel playback)

The DVR allows you to quickly review a single channel of playback over a period of day, hour and minute.

1. Press the [Time Search] button to access the time search table. The day will be displayed.


TIME SEARCH CHART
DATE
09/04/2011 19:--:--
EVENT SELECT
HOUR
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
CONTINUOUS
EVENT
-/+ DAY/HOUR/MINUTE
Day, hour, minute
Channel

2. Choose the desired channel by pressing by numeric button.

1.

3. Use the [- +] button to navigate between day and hour. Using the mouse, work with the wheel.

4. While snapshots are displayed, use the numeric buttons to review another channel.

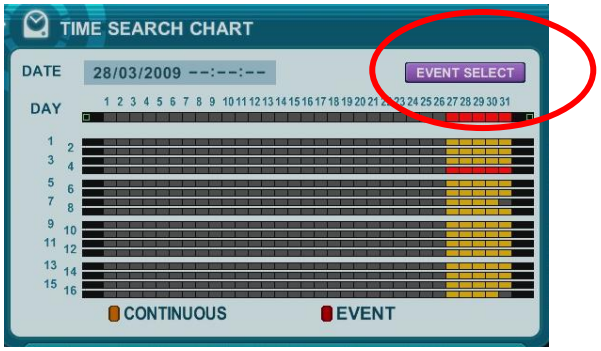
5. Use the directionl buttons to select a snapshot and and press the [ENTER] button. Using the mouse, double click.

6. The DVR will start the playback mode, displaying the selected channel. Any channel number or the [DISPLAY] button may be pressed to change the display mode.

9.2.3 Recorded event search

The recorded event search feature allows you to search for recorded video by event.

Use the direction buttons to choose “event select”.



Press [ENTER]. Press the [- +] buttons to select “event record”.

To save changes and exit the menu, press the [MENU] button.
To exit the menu without making changes, press the [CANCEL] button.

9.2.4 Event source search

The event source search feature allows you to search for an occurred event.
The time search table displays the times which selected occurred events.

9.2.5 Event area search (single channel playback)

The recorded video data can be searched by area.

Select all. Press the [ENTER] button to select.

Clear all. Press the [ENTER] button to select.

Select. Press the [ENTER] button to select.

Press the [CANCEL] button twice to exit this menu.

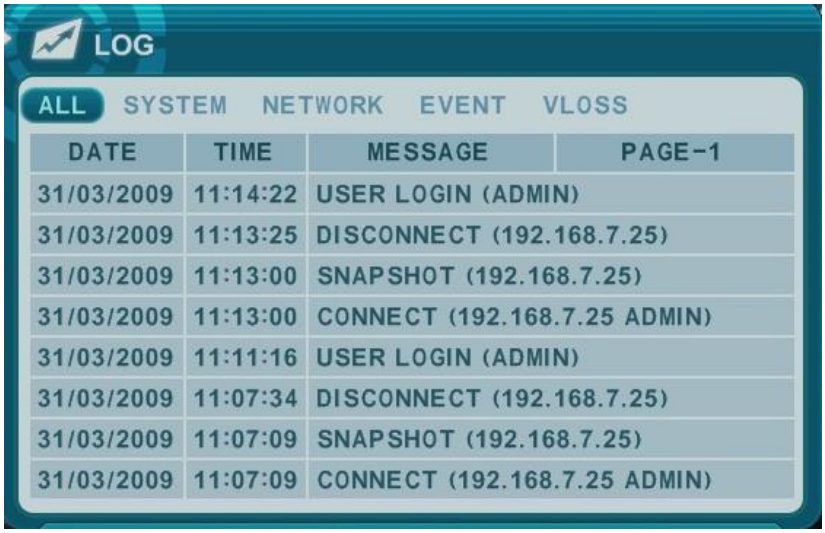
9.3 Go to search

1. Press the [Time Search] button for 2 seconds. The time input menu will pop up.
2. Set the date and time (start and end) you wish to search.
3. Press [ENTER] or [MENU] to start the search.

9.4 Log list search

The logs can be used to search and review a point in time of the recorded data.
Alarm, motion, video loss and system related logs can be searched and played back directly from the time of the incident.

1 . To start the event search, press the [LOG] button on the remote control.
The log list menu pops up, as shown below.



MENU TAB	CONDITION
ALL	All events are listed which occurred ever since the recorded was initially powered.
SYSTEM	It shows all system events.
NETWORK	It shows all network events.
EVENT	It shows all events except for alarm, motion, video loss and system failure.
VIDEO LOSS	It shows all video loss events.

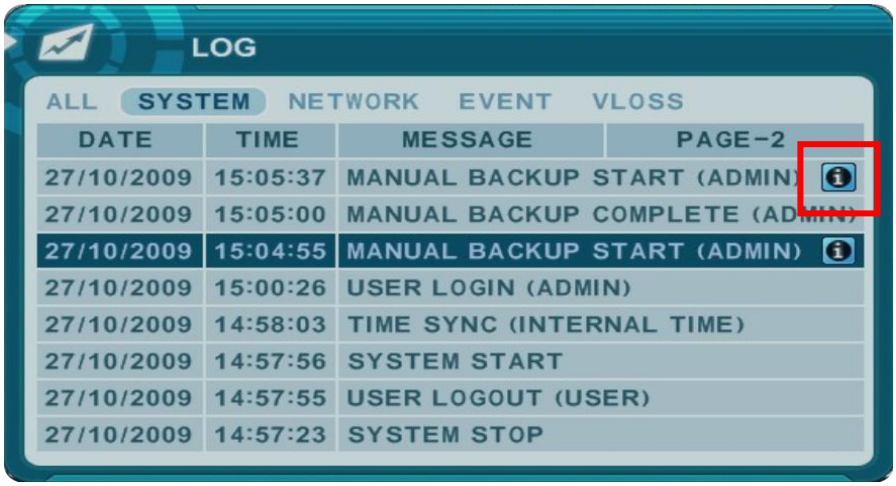
2. Use the up/down buttons [▼▲] to go to “Time”.
Use the left/right buttons [◀▶] to move to the next page.

3. Press the [ENTER] button to start the playback.

Note:
The log lists are saved on the HDD.

Detailed log information:

icon means that there is more detailed information available.



Press the [INFO] button. A window with detailed information will pop up:

10.BACKUP

10.1 Manual backup

10.1.1 Internal CD/DVD-R/W drive

Note:
The backup process to the CD-RW and DVD-RW only works in manual backup mode due to the limited capacity of the medium.

1. Insert a blank media into the built-in CD/DVD drive.
   Note:
   The CD/DVD must be formatted before backup.

2. Press the [BACKUP] button on the remote control and the backup menu will appear.

3. Use the [-, +] button to select the device CD/DVD-RW.

4. Use the [-, +] button to select the channel. All channels are set by default.

5. Please select the data you wish to backup:
   (1) All data: Normally recorded data
   (2) Event only: Event recorded data

6. The file will be saved as ".s" format. AVI is not supported for CD/DVD.

7. Select the time range starting time and ending time (24 hour clock).

8. Press START.

9. Press the [+] button to start the backup process.
   The CD/DVD indicator will light up in blue to show that the backup is in progress.

CD/DVD ROM

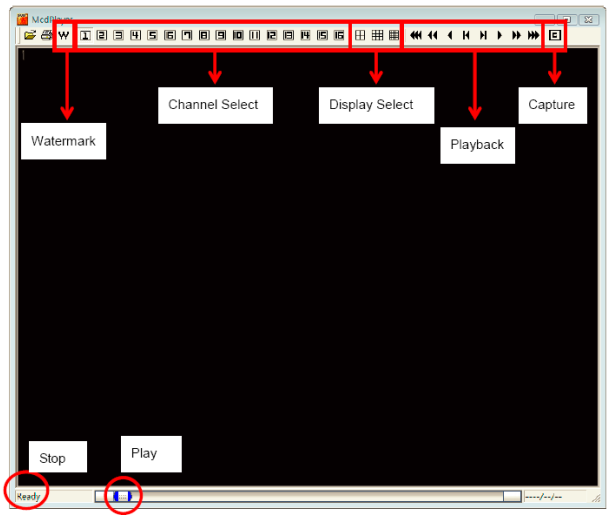
The progress of the backup will be displayed at the bottom of the window as percentage of the entire backup process. Please note that the CD/DVD-RW icon's colour will be blue to signify that backup is in progress. The OSD will disappear by pressing [CANCEL] button. However, pressing [BACKUP] button again, the backup status is displayed again. It is recommended not to perform any playback while the DVR is in backup session.

10. When finished, the CD/DVD icon will changed to grey and the CD/DVD is ejected.

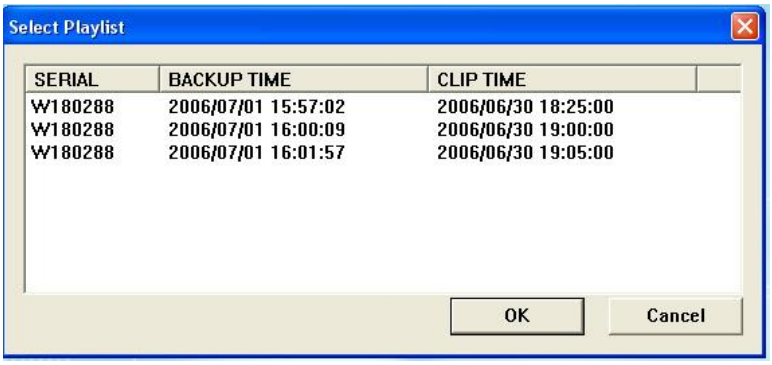
    If there is not enough space on the CD/DVD, the DVR will automatically eject the disk when it's full. The recorder will resume the backup process once a new media is inserted in to the drive.

    Note: During the backup process, no recording should be running.

The playback software will simply "auto-run" and does not require the installation of software on your PC.



If you choose to backup several items, a "playlist" will pop up instead of "auto run".



10.1.2 USB memory stick

The backup process for an external USB memory stick is identical to the one described before for the CD/DVD-RW backup.

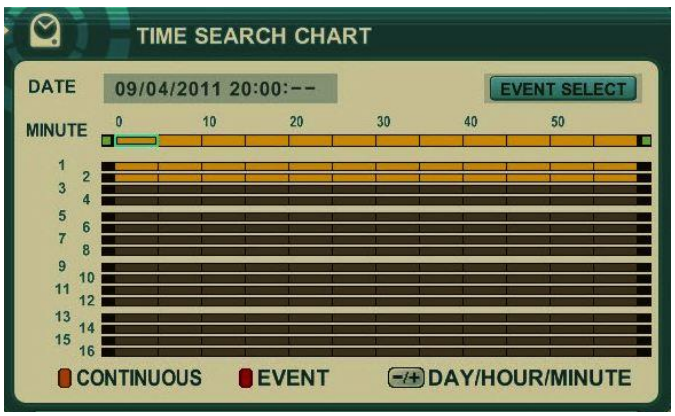
To read the USB backup, please use FAT32 or NTFS formats.

To backup as an AVI file, set the file format to AVI using the [+] button.

10.1.3 Backup range setup

It is possible to run a backup over a specific time range.

- Go to the “time search chart” menu.
- Press the [◀▌] button to set the backup start time. Press the [▌▶] button to set the end. The selected time will be displayed in violet.



- The selected backup time from 19:00-59 will be displayed for the backup range.
- Use the [LOG IN/OUT] button to toggle between the time ranges.

10.2 Auto backup via FTP-server

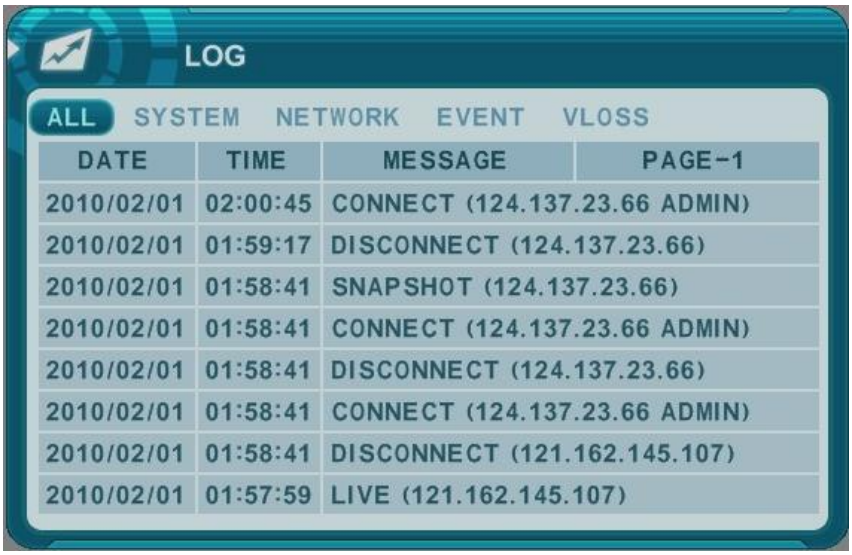
1. Use the [- +] button to select the device “FTP”.

7. Use the direction buttons to alter the FTP settins.
   The menus are displayed with options on the left-hand column and settings in the right hand column.

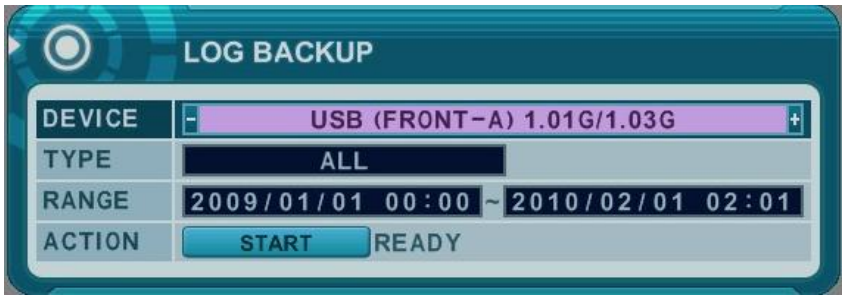
ITEM	ADJUSTMENT
Server	Select th highlighted FTP server and then press the numeric buttons to define it.
Port	Define the port that the FTP server will communicate through.
Authentication	Select „ON“ or „OFF“.
User ID	Enter the user ID of the FTP server.
Password	Enter the password (no capital letters).
Connection	Select the mode, either “passive” or “active”.
Backup path	Path for FTP server.
Test	Test of FTP server.

10.3 Log list backup

1. Plug-in the USB memory stick to the USB port.
2. Press the [LOG] button to see the log list of the DVR.



3. Press the [BACKUP] button to save the log list to the USB memory stick.
   - Use the [- +] button to select a device.
   - Select the type of log list among ALL, SYSTEM, NETWORK, EVENT and VLOSS.
   - Select the time range (starting time and ending time).
   - Press the [+] button to start the backup process.



11. Remote access via the Internet Explorer

You can access your SanStore recorder via the Internet Explorer.

11.1 IP address

Open the Internet Explorer.

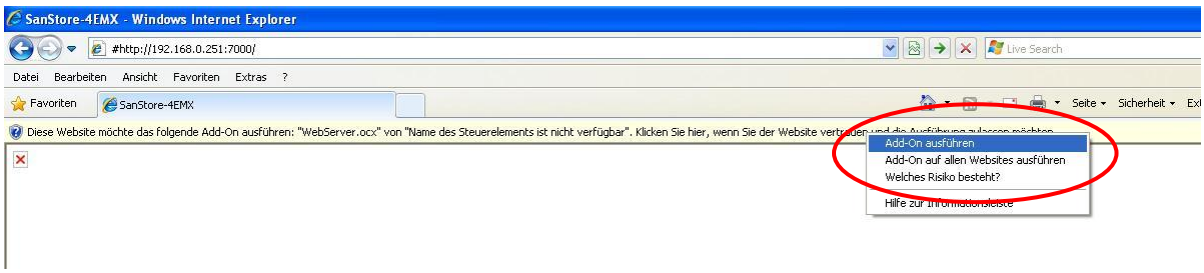
As URL, enter the IP address of the recorder:
Example: http://192.168.0.251:7000

(In this example, a recorder with port 7000 is entered.)

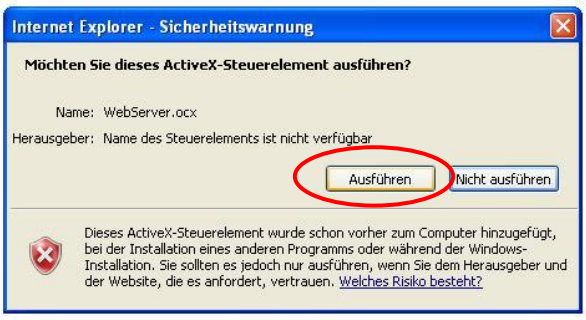
11.2 Login

Either login as „admin“ or as “user”.

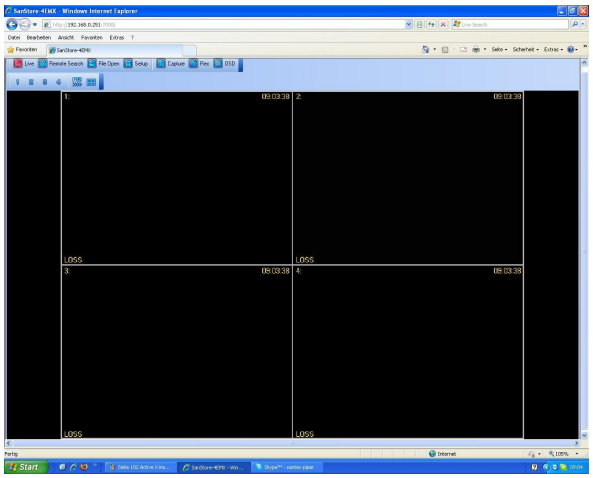
The default password is: 000000



If you access the recorder via the Internet Explorer for the first time, click on „add-on“ so that the plug-in is loaded.


Internet Explorer - Sicherheitswarnung
Möchten Sie dieses ActiveX-Steuerelement ausführen?
Name: WebServer.ocx
Herausgeber: Name des Steuerelements ist nicht verfügbar
Ausführen
Nicht ausführen
Dieses ActiveX-Steuerelement wurde schon vorher zum Computer hinzugefügt, bei der Installation eines anderen Programms oder während der Windows-Installation. Sie sollten es jedoch nur ausführen, wenn Sie dem Herausgeber und der Website, die es anfordert, vertrauen. Welches Risiko besteht?

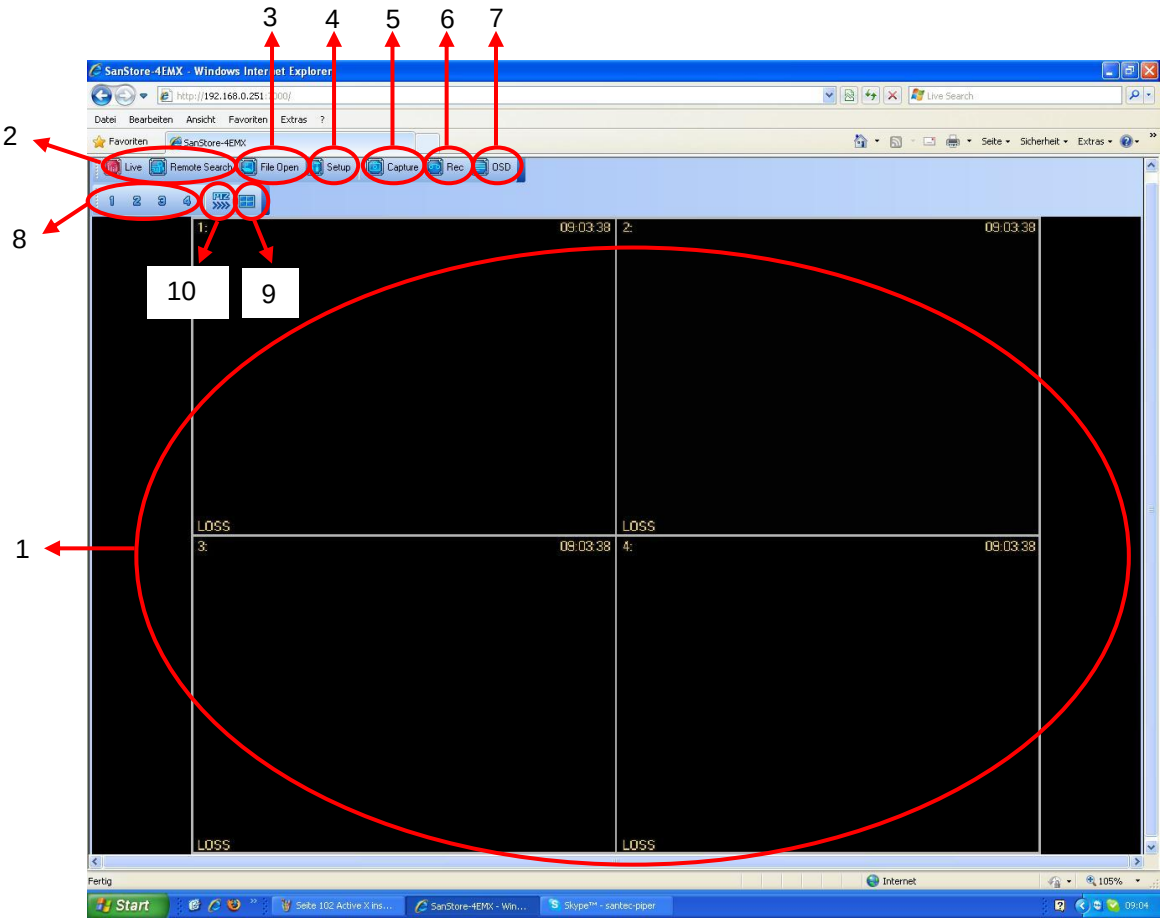
Click on „install“.



The recorder display appears.

11.3 Recorder playback

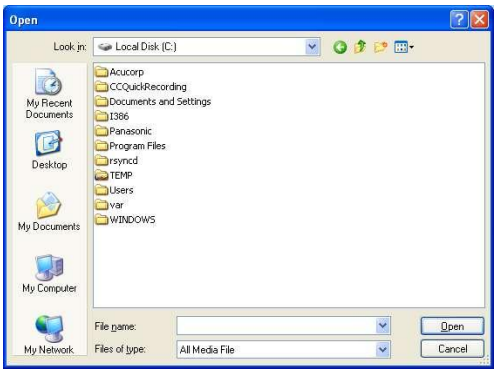
After the ActiveX plug-in has been installed, the following screen pops up:



1. Main camera display window:
A live video or a playback video is displayed for 4/8/16 cameras (depending on the recorder model). The respective channel number, channel title and frame rate are displayed, too.

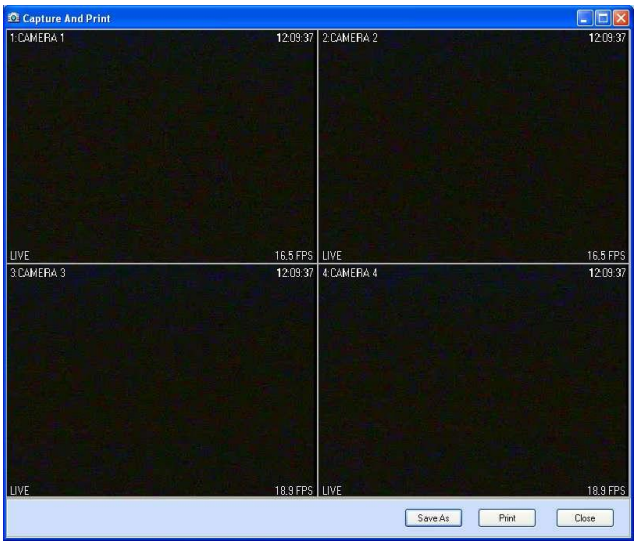
2. Mode display:
It is indicated whether the program runs a live video or a playback video.

3. File open:
Select the appropriate file.



4 Setup:
Opens the recorder menu to adjust the settings.

5. Capture (Snapshots):
You can take a snapshot from a live picture or from the playback video. These images will be saved in JPEG or BMP format. In addition, you can also print pictures from your local printer.



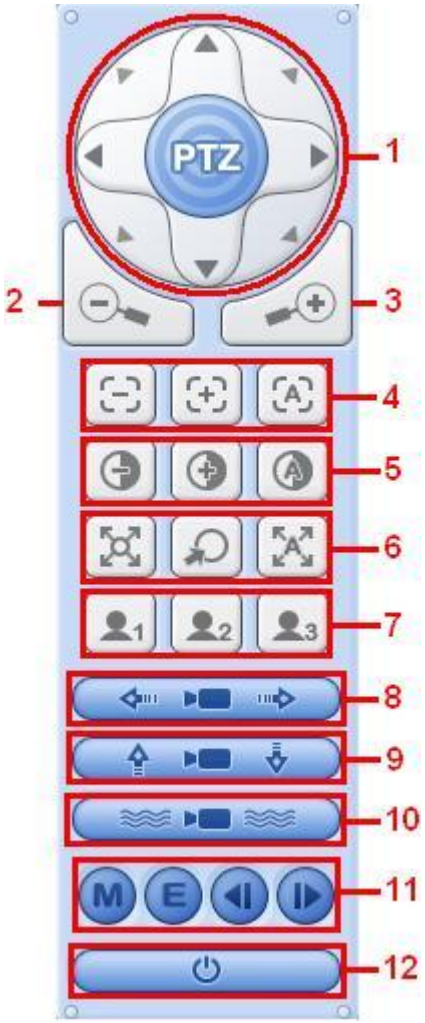
6. Rec:
A recording is started or stopped.

7. OSD:
The information (camera title, camera name, time, display mode) are displayed or not displayed on the screen.

8. Select camera number:
Select the appropriate camera number which should be displayed as full screen.

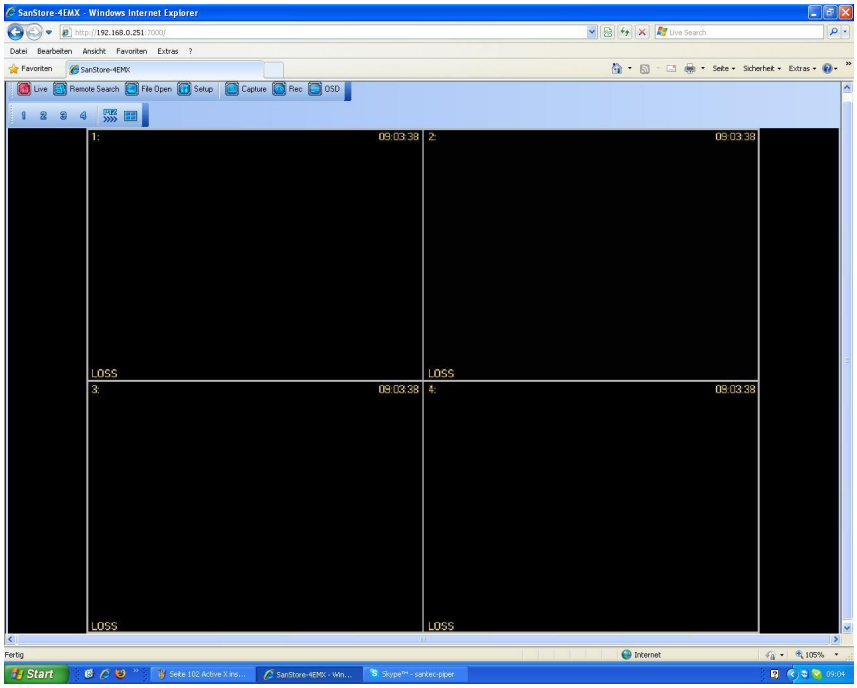
9. Display of camera views:
You can select from the following display options:
Full screen, 4 channels, 6 channels, 7 channels, 8 channels, 9 channels, 10 channels or 16 channels (display options depend on the recorder model/number of channels). All these options are always available, independent of the number of connected recorders or the number of displayed cameras.

10. PTZ control:
If several PTZ cameras are connected to the recorder, they can individually be selected and controlled by using the PTZ control box. To control a channel-specific PTZ camera, click on the channel the PTZ camera is connected to.



1	**Pan/tilt direction buttons**	
		Pan and tilt.
2	**Zoom in**	
		Zoom in.
3	**Zoom out**	
		Zoom out.
4	**Focus**	
		Focus near.
		Focus far.
		Auto-focus.
5	**Iris**	
		Iris close.
		Iris open.
		Auto iris.
6	**Preset and tour**	
		Save preset.
		Go to preset.
		Run presets sequentially.
7	**Special functions**	
		First customer function.
		Second customer function.
		Third customer function.
8	**Auto-pan**	
		Run auto-pan.
9	**Auto-tilt**	
		Run auto-tilt.
10	**Pattern**	
		Run pattern.
11	**Menu, escape and pan speed**	
		Go to menu.
		Escape menu.
		Decrease/increas pan speed.
12	**Power on/off**	
		Power on/off.

11.4 Live mode



1. Camera title

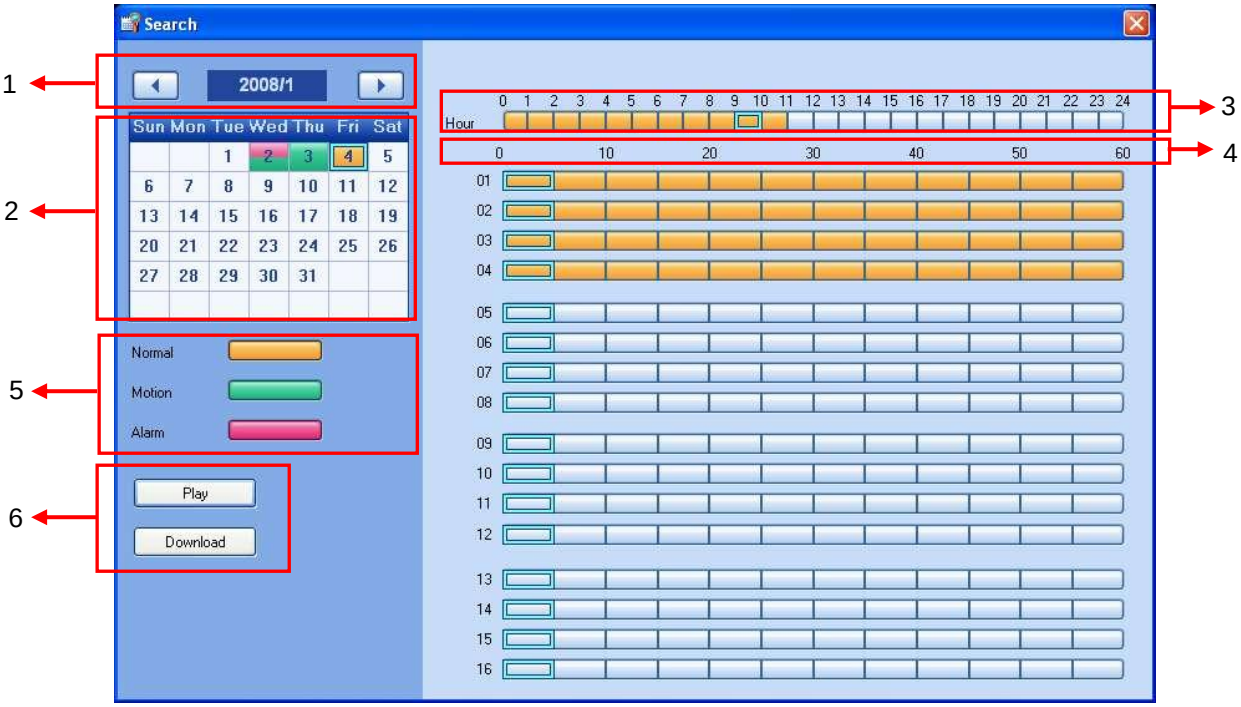
2. Time

3. Recorder status
   - REC: Normal recording
   - Wait: Wait for initial connection
   - Loss: Video loss
   - Close: Disconnected from recorder
   - Alarm: Alarm recording
   - Motion: Motion recording
   - PB: Playback of selected channel
   - Live: Live viewing
   - Limit: Maximal network connection is limited to 3 users.

11.5 Remote playback

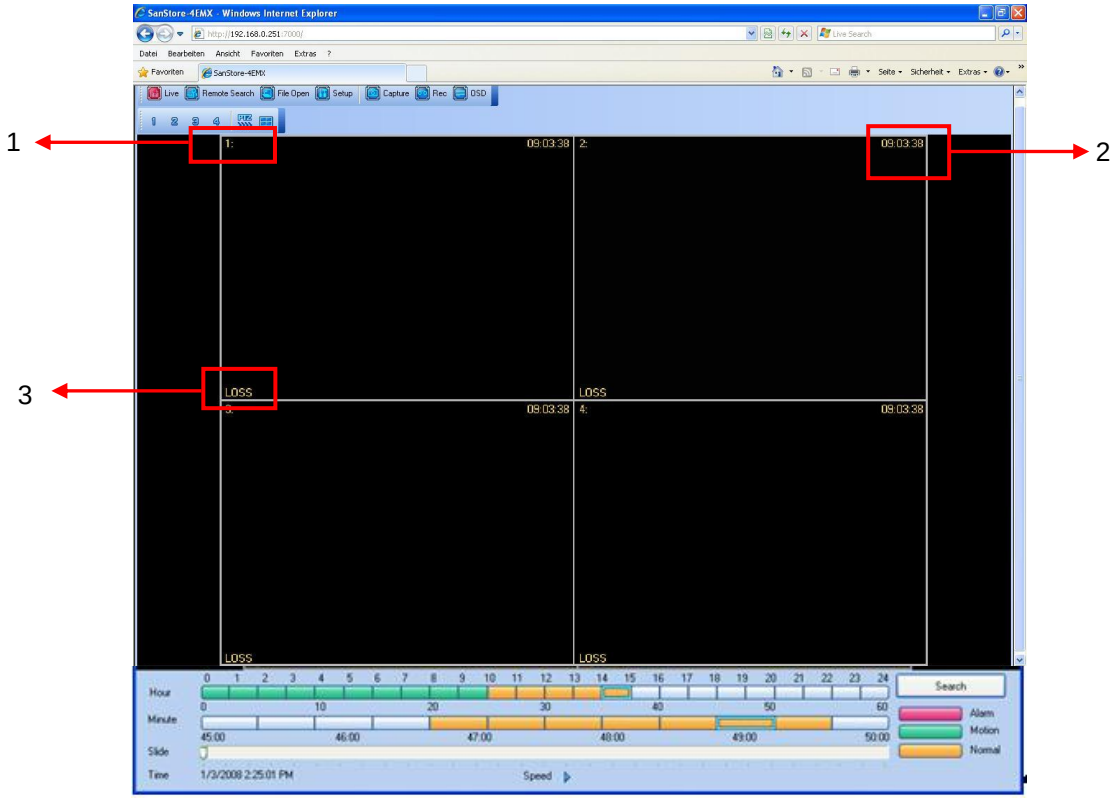
Click on „Remote Search“

The following window pops up. Select the date and the time and then clikc on “Play” to start the playback.



1. Year and month
2. Day
3. Hour
4. Minute
5. Type of video recording:
   For every hour or minute window the respective recording mode is indicated:
   - Yellow: Normal recording
   - Green: Motion recording
   - Red: Alarm recording
6. „Play“ and „Download“:
   - Play: The playback is run.
   - Download:
     The videos are downloaded to the HDD. Please select the path to save the videos.

During playback mode, you can click on „hour“ or „minute“ or „clip“ at any time to scrol forwards or backwards. You can also changethe playback speed.



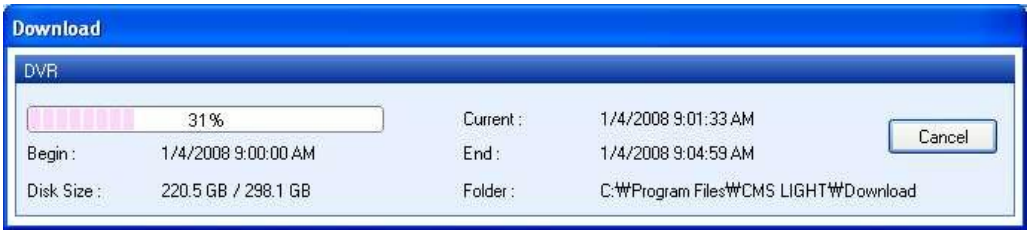
1. Camera title

2. Time

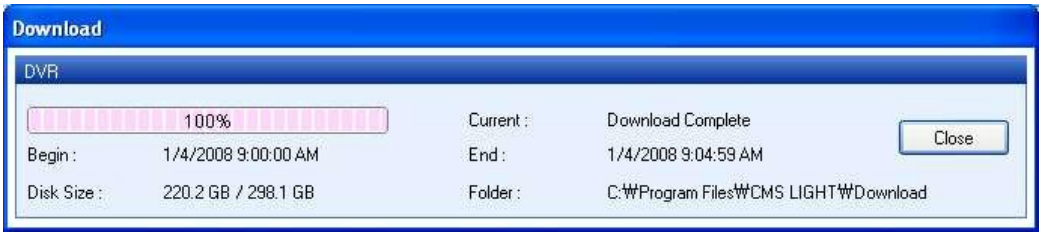
3. Recorder status
   - REC: Normal recording
   - Wait: Wait for initial connection
   - Loss: Video loss
   - Close: Disconnected from recorder
   - Alarm: Alarm recording
   - Motion: Motion recording
   - PB: Playback of selected channel
   - Live: Live viewing
   - Limit: Maximal network connection is limited to 3 users.

11.6 Download

To download a file, click on „download“ instead of on „play“ (as described in the previous chapter).
The download window pops up. The begin, the end and the current time are indicated.



As soon as the download process is completed, the message „download complete“ appears.



11.7 Recorder setup

The recorder setup menu allows you to change recorder settings via remote access, just like you would do it directly on the recorder.

12. TECHNICAL SPECIFICATIONS

SanStore LMX series

Model	SanStore-4LMX	SanStore-8LMX	SanStore-16LMX
Video input	4x BNC, 1 Vpp	8x BNC, 1 Vpp	16x BNC, 1 Vpp
Loop through outputs	No		
Video output	1x monitor BNC 1x VGA 1x HDMI (1080P) 1x spot monitor BNC		
Compression	H.264		
Max. resolution	D1 (720 x 576)		
Alarm input/output	4/1		
Operating system	EMBEDDED LINUX		
System control	PC mouse, IR remote control, keys, control keyboard KSC-3505, EMS software, Internet Explorer		
Max. frame rat	100 fps: 720 x 576	100 fps: 720 x 576 200 fps: 720 x 288	100 fps: 720 x 576 200 fps: 720 x 288 400 fps: 360 x 288
Audio inputs/output	1x Cinch / 1x Cinch		
Characteristics			
Recording mode	Continuous, alarm, motion, schedule		
Motion detection	Mask: 8 x 8 adjustable Sensitivity: 20 levels		
PTZ-Steuerung	Yes		
PTZ-Protokolle	Pelco P/D, etc.		
Passwortschutz	Yes		
Search mode	Date/time, event, log search		
Backup	External HDD, internal CD/DVD drive, USB stick, network, FTP		
Communication	RS-422/485, 1x Ethernet (1Gbit), 2x USB 2.0		
Internal HDD	1x SATA-I (max. 2 TB)		
External HDD	Max. 2x USB (only backup)		
Remote access via	EMS Software, Internet Explorer, iPhone, Android		
Max. number of remote accesses	3		
Time synchronisation	SNTP protocol		
General			
Voltage	12 V DC via external power supply 230 V AC		
Operating temperature	0 to +40° C		
Dimensions (WxHxD)	360 x 70 x 360 mm		
Weight	2.4 kg without HDD		

Subject to technical changes without prior notice. Errors excepted.

SanStore MMX series

Model	SanStore-4MMX	SanStore-8MMX	SanStore-16MMX
Video input	4x BNC 1 Vpp	8x BNC 1 Vpp	16x BNC 1 Vpp
Loop through outputs	4x BNC 1 Vpp	8x BNC 1 Vpp	16x BNC 1 Vpp
Video output	1x monitor BNC 1x VGA 1x HDMI (1080P) 2x spot monitor BNC		1x monitor BNC 1x VGA 1x HDMI (1080P) 4x spot monitor BNC
Compression	H.264		
Max. resolution	D1 (720 x 576)		
Alarm input/output	4/4	8/4	16/4
Operating system	EMBEDDED LINUX		
System control	PC mouse, IR remote control, keys, control keyboard KSC-3505, EMS software, Internet Explorer		
Max. frame rate	100 fps: 720 x 576	100 fps: 720 x 576 200 fps: 720 x 288	100 fps: 720 x 576 200 fps: 720 x 288 400 fps: 360 x 288
Audio inputs/output	4x cinch / 1x cinch	8x cinch / 1x cinch	16x cinch / 1x cinch
Characteristics			
Recording mode	Continuous, alarm, motion, schedule		
Motion detection	Mask: 8 x 8 adjustable Sensitivity: 20 levels		
PTZ control	Yes		
PTZ prorocols	Pelco P/D, etc.		
Password protection	Yes		
Search mode	Date/time, event, log search		
Backup	External HDD, internal CD/DVD drive, USB stick, network, FTP		
Communication	RS-232C, RS-422/485, 1x Ethernet (1Gbit), 2x USB 2.0		
Internal HDD	Up to 3x SATA-I		
External HDD	Up to 10 external HDDs (SATA-II with PMP) via 2x e-SATA		
Remote access via	EMS Software, Internet Explorer, iPhone, Android		
Max. number of remote accesses	3		
Time synchronisation	SNTP protocol		
General			
Voltage	100-240 V AC, adjustable		
Operating temperature	0 to +40° C		
Dimensions (WxHxD)	360 x 110 x 370 mm		
Weight	6.5 kg without HDD		

Subject to technical changes without prior notice. Errors excepted.

SanStore HMX series

Model	SanStore-8HMX	SanStore-16HMX
Video input	8x BNC, 1 Vpp	16x BNC, 1 Vpp
Loop through outputs	8x BNC, 1 Vpp	16x BNC, 1 Vpp
Video output	1x monitor BNC 1x VGA 1x HDMI (1080P) 3x spot monitor BNC	
Compression	H.264	
Live picture resolution	D1 (720 x 576)	
Alarm input/output	8/4	16/4
Operating system	EMBEDDED LINUX	
System control	PC mouse, IR remote control, keys, control keyboard KSC-3505, EMS software, Internet Explorer	
Max. frame rate	Real-time at D1 (720 x 576)	
Audio inputs/output	8x cinch / 1x cinch	16x cinch / 1x cinch
Characteristics		
Recording mode	Continuous, alarm, motion, schedule	
Motion detection	Mask: 8 x 8 adjustable Sensitivity: 20 levels	
PTZ control	Yes	
PTZ prorocols	Pelco P/D, etc.	
Password protection	Yes	
Search mode	Date/time, event, log search	
Backup	External HDD, internal CD/DVD drive, USB stick, network, FTP	
Communication	RS-232C, RS-422/485, 1x Ethernet (1Gbit), 2x USB 2.0	
Internal HDD	3x SATA-I	
External HDD	Up to 10 external HDDs (SATA-II with PMP) via 2x e-SATA	
Remote access via	EMS Software, Internet Explorer, iPhone, Android	
Max. number of remote accesses	3	
Time synchronisation	SNTP protocol	
General		
Voltage	100-240 V AC	
Operating temperature	0 to +40° C	
Dimensions (WxHxD)	430 x 100 x 450 mm	
Weight	7.9 kg without HDD	

Subject to technical changes without prior notice. Errors excepted.

NOTES:

NOTES:

NOTES

Your local distributor:

SANTEC
VIDEO TECHNOLOGIES